International Journal of American Linguistics

VOLUME XIII NUMBER 4

PENUTIAN

ROBERT SHAFER

BERKELEY, CALIFORNIA

1. Introduction.
2. Unusual shifts.
3. Yokuts x.
4. *g.
5. *k.
6. *k?
7. k and '.
8. *ŋ.

1. California languages have long fascinated Americanists because they presented such great diversity within such a comparatively small area. Yet attempts to group them into families have often been unacceptable to conservative linguists. One of these proposed families, Penutian, is the subject of the present investigation.

Although J. W. Powell apparently accepted Costanoan and Miwok as composing a single linguistic stock in 1877 in Powers' Tribes of California,[1] he separated the two in 1891 in his Indian Linguistic Families of America North of Mexico.[2] Roland B. Dixon and A. L. Kroeber suggested this grouping again in 1903;[3] but at that time, they were attempting to classify languages by structure and not by lexical content, and none of the morphological features considered by them occurred in all the languages later classified as Penutian nor excluded non-Penutian languages. In 1910, Kroeber presented some 50 "resemblances" between Miwok and Costanoan, and pointed to the equivalences of Miwok k:Costanoan s,[4] and of Miwok l:Costanoan r.[5] He also referred in a footnote to some resemblances between Yokuts and Maidu.

Three years later, Dixon and Kroeber made a bold but unfortunate beginning in New Linguistic Families in California[6] when they cited the principal Penutian forms for *bow*: Yokuts dayap, dalap, Wintun kalul, kulsak, Costanoan lawa, conok, tanuka, Maidu pandak, Miwok soloku, kono, tanuka. They admitted that "such a list, far from being convincing, is not even promising." But after breaking up short words into two syllables, long words into three, they stated that "it is obvious that these words compel the reconstruction of an original form very close to tölök in which ö represents *a* or a back vowel." Just how the break-up brought about the compulsion has been left an unsolved mystery.

Six years later[7] they presented their evidence, not entirely abandoning the break-up, and their comparisons indicating that they assumed the interchange of any stop, affricate, or sibilant, or of any liquid, nasal, dental, fricative, or affricate, all in a very irregular manner.[8] Yet perhaps one-sixth to one-third of the comparisons were sound, but were so mixed in with entirely unrelated stems and buried among so many unsound

[1] According to Harry Hoijer, it was Gatschet in 1877 who classed Costanoan with Miwok (Linguistic Structures of Native America VFPA 6.14 (1946)).

[2] P. 70.

[3] The Native Languages of California, AA 5.3 n (1903).

[4] Kroeber apparently considered k and s interchangeable, although most instances cited were of the above type.

[5] The Chumash and Costanoan Languages, UC-PAAE 9.259 f (1910).

[6] AA, n. s. 15.647 f (1913).

[7] Linguistic Families of California, UC-PAAE 16.47–118 (1919).

[8] P. 61–6.

comparisons, that together with the disregard for phonetic equations, most recent recorders of individual Penutian languages have expressed to the author their doubts of the existence of such a family.[9] Yet Edward Sapir added the names of other languages, such as Tsimshian, Chinook, Sahaptin, Takelma, Kalapuya, and Mixe-Zoque and Huave to the Penutian group without citing any evidence[10] except that the phonetic pattern of the stems of some languages was similar.[11] And other scholars have expressed the view that still other languages should be included.[12]

[9] And the Encyclopedia Britanica, 14 Ed., stated under Penutian: "The unity of the family has not been considered proved by all authorities, . . ."

[10] Encyclopedia Britanica, 14 Ed., vol. 5, 139.

[11] A Characteristic Penutian Form of Stem, IJAL 2.58–67 (1921). Sapir mentions having collected materials to demonstrate genetic relationship of some of these languages but they have not been published.

[12] Melville Jacobs is convinced that Coos and Sahaptin belong with California Penutian (personal communication). J. Alden Mason stated that B. L. Whorf was convinced that Penutian, Uto-Aztekan-Tanoan, Mayan, Mixe-Zoque-Huave and perhaps Totonacan should be combined into a phylum termed Macro-Penutian (The Native Languages of Middle America, Chapter 5 of The Maya and Their Neighbors, New York and London [1940], 58). Frederick Johnson added to Whorf's Macro-Penutian, Xincan and Lencan (The Linguistic Map of Mexico and Central America, op. cit., ch. 6).

The name Penutian, based on the words for *two*, was not a happy choice but has been retained as ultimate grouping of other languages with the five considered here may bring about the entire revision of the nomenclature.

The degree of interrelationship of the California Penutian languages cannot be determined at present. The large number of Miwok-Maidu lexical comparisons is due to the more extensive and parallel vocabularies of those languages made available to the writer by Lucy Freeland and Jaime de Angulo and based on the well-selected word list prepared by the latter, while the Yokuts and Costanoan vocabularies are not parallel. My impression is that Wintun has been more subject to foreign influence than other Penutian languages,—if it is not a substratum stock not entirely assimilated to Penutian.

Setting up such far-flung linguistic empires with little or nothing to hold them together except the authority of their builders has gone so far that one of the founders of the original Penutian group, A. L. Kroeber, has protested.[13] It seems preferable to examine in some detail the data in support of the Penutian family proposed by Dixon and Kroeber and establish such phonetic equations as one can for the five languages and many dialects, clearly showing where our present materials are insufficient or inaccurate. Linguists will then have a more substantial basis for deciding first whether there is such a family, then whether they can expand it or not. Moreover practical considerations make it necessary to restrict the linguistic area considered when the languages are so distantly related as those of the Penutian group and when great gaps in our information about certain dialects make it necessary to array a considerable body of evidence to establish a single phonetic equation.

After eliminating the greater mass of phonetically unsound comparisons in the earlier work on Penutian, a residue of comparisons remains to form a nucleus around which one may begin to build the comparative grammar of Penutian. Even if Dixon and Kroeber had utilized all the materials on the subject then available, they could not have established Penutian on a sound phonetic basis at that time. And although all available sources have been taken into consideration in the present work, including a number of manuscripts[14] which had not

[13] This is merely "intuitional guessing" as Kroeber has aptly termed it (Some Relations of Linguistics and Ethnology, Lg. 17. 289 (1941)).

[14] For scholarly later works, the writer is chiefly indebted to Lucy S. Freeland for access to her excellent manuscript vocabulary and grammar of Central Miwok with some Lake Miwok vocabulary; to Stanley S. Newman for reference to his profound study of Yokuts grammar while still in manuscript; and to Jaime de Angulo for use of his Southwest Wintun grammar and vocabulary and Southern Maidu vocabulary. All of these were more extensive than anything published when this

been written when Dixon and Kroeber were active in this field, one must still leave many phonetic problems unclarified today. The sources of course vary in reliability,[15] and one of the five languages, Costanoan, became extinct before an accurate and adequate

manuscript was in preparation. Dorothy D. Lee's Northern Wintun (Wintu) vocabulary provided clarification of certain phonetic series in this paper.

The more accurate of the earlier sources, such as recordings by Powers, Gatschet, and Kostromitonov, have been utilized more fully than by Dixon and Kroeber as these sources often show the extension of a root into certain languages or dialects, although they do not always leave us certain of the precise nature of the phonemes involved.

[15] The general accuracy of Freeland's Miwok record as to accent and length of vowels and consonants has been verified from various other sources. The only inconsistency noted was kusu·kenī and kusu·kena recorded in different places in her vocabulary. Considering the size of her work, only one slight inconsistency is remarkable. I have had no control on Newman's record, but it appears much more precise than Kroeber's early work on Yokuts. As de Angulo's vocabularies were recorded incidentally to his study of the morphology, he did not distinguish the interdental from the dental. Apparent Southern Maidu inconsistencies noted are ḳato *to gamble* but kato *to play*, ṗöllös *water storing basket, any large basket* but öllös *pack basket*.

In his Sketch, Dixon transcribed the word for *deer* as sūmī but in the text as sömī (44.13); in the Sketch, hemē *gopher* but in the text as hemē- (34.5); and in the text both ṫöi- and töi- *to coil (of a serpent)* (196.23; 198.13). In Kroeber's record of Monterey Costanoan, one may note the word for *knee* transcribed tolc (75), dŏlc (79), and in the comparative vocabulary tols; and tatuki-mátsan, taṭiki-matcan, tatciki-matcan *coyote* (79, 80). Barrett recorded tissụ *hand*, tissū *fingers*, and tissu *nails* for Southern Miwok, although they are obviously the same word. Where Barrett's forms are cited for Central Miwok, it is usually for comparison with the more accurately recorded Freeland form, and to indicate that similar forms given by Barrett for other Miwok dialects are probably pronounced in the same or a very similar manner to those given by Freeland for Central Miwok.

Kroeber's linguistic work was unfortunately all done early in his career. His description of impure vowels in Yokuts was that they would "be familiar to anyone acquainted with the neighboring Shoshonean family of languages. They are perhaps due to the rounding of the lips." He added that "ö and ü correspond to e and i as ụ, ọ, ạ do to u, o, a" (p. 173). But if the distinctive quality of ö and ü was due to lip rounding, it is improbable that ụ and ọ were more rounded than u and o. Kroeber's description of "impure" vowels is far from precise in his Shoshonean Dialects of California, UC-PAAE 4 (1907) 90, 91, but is more consistent. He wrote that ọ̈, ụ̈, ọ, ụ "have a peculiar impure or muddied quality, which may be due to imperfect rounding of the lips," and "ọ̈, ụ̈ differing from French and German ö, ü as ọ, ụ differ from o, u." One may infer from this that ọ̈, ụ̈ are more unrounded than German ö, ü, and that ọ, ụ are more unrounded than o, u, the essential characteristic of his impure vowels being imperfect rounding of the lips.

Dixon did not describe the vowels of Maidu, merely arranging them in a tower of Babel pattern. Freeland classed her ĭ as a mixed vowel. As nearly as I could determine from her, it is an unrounded u, possibly the Russian yerry. Kostromitonov wrote yerry frequently, but not always where Freeland recorded ĭ, so that I would guess that yerry is a close approximation to Freeland's ĭ but not identical with it. Barrett probably recorded this phoneme as u, ū, û, ụ, and ụ̄. Some writers have recorded it as a, probably having in mind the a of America.

The difficulty of interpreting early vocabularies needs no comment here, except for Costanoan, where added to phonetic difficulties is the incomplete analysis of the materials. Although Mason made a good beginning at analyzing de la Cuesta's "Mutsun" sentences and phrases, there remain too many which look as if they came from the same roots, as tan-kar *roof of mouth*, kar-kas *molar teeth*; wakku ? *open the stomach and entrails*, wetso ? *take out the belly*; eme, emse, mene, (mane) *forget*, mensie ? *be ignorant of, not understand*; muma, mapu (mupa) *suck*, musi *to suckle*; noso-po *breathe*, nusa-ni *pant, breathe heavily*; xata *sweep*, xatki ? *cleanse, purify*, xiti, xitui, (xite) *cleanse oneself*; mistu ? *warm oneself*, musi *to heat, warm*, muxi ? *be hot (of weather)*; xine *go, walk*, xiwa *arrive, bring*; swisia-ni ? *singe the hair*, switšu *to toast*; kallu ?, kase *to bite*; we-solo, -saro, -yero, -tan *large, great*, waterei ?, wetere ? *augment, make great*. Not only the root forms but the precise meanings are often doubtful; thus five words meaning *to drown* have been noted: meno-ni or menso ?, roto, tittši?, kattši? and wakun, and only the last has been more specifically defined *drown at childbirth*.

phonemic record was obtained of any one of its dialects. Other languages have no doubt since become corrupted by association of various tribes on the same reservation. In short, Penutian languages are either extinct or fast becoming so, and adopting a realistic view, the most we may expect of Penutian comparative grammar is close phonetic and semantic parallelism together with some certain phonetic equations and some probable phonetic equations where allowance is made for insufficient or imperfect records.

One might arrange the Penutian comparisons under a few phonetic reconstructions, *k, *t, *p, etc., as Sapir did forNahuatl and Uto-Aztekan, explain such unusual features as one can as due to surrounding vowels, and note that under unknown conditions certain other exceptions are found. Penutian materials are sufficient to array a much more impressive list of such supporting evidence than Sapir assembled for Uto-Aztekan. But if he had given phonetic equations, that for his guttural series would look something like the following (reducing orthographic c and qu to k): Nahuatl k = SP q, q', q̇, 'q', k', γ, nk, nq = Pap. k, h = Cora k = Hopi g, k = Tar. k_1 = Tüb. g_1 k_1 = Tepecano k = Mono g_2 k_1 = Ute q_1 = Huich. k = Cahu. k, x = Pima $k_{1.5}$ $h_{.5}$. The subscript numerals indicate the occurrences where few.

Such an arrangement would be an improvement as the phonemes involved do look like probable equivalents of some type of primitive guttural. But every Americanist knows that most American Indian languages had not merely aspirated surd stop consonants, but also unaspirated surd or sonant and glottalized occlusives, and sometimes both palatal and velar gutturals, and it seems preferable to attempt to bring some order into the still considerable confusion by ascertaining the possible phonetic equations and to bring out clearly those which are uncertain, rather than by oversimplification to give the impression that the comparative grammar of the family is rather well established and that little remains to be done.

Space will prevent reference to specific problems in comparative grammar outside of phonetics, but a careful reader may note frequent suffixes or determinatives added to a stem in one language but not found in another; these are unexplainable from present grammars and will require further study, probably in the field. The effect of accent must also be left for further research. Where the same stem was found in neighboring non-Penutian languages, it has been added at the conclusion of the entry as a subject for future investigation as to whether it is a loan-word to or from Penutian or whether the foreign language where it occurs is more or less distantly related genetically to Penutian.

TRANSCRIPTION. In all Penutian languages well described recently, guna vowels are generally open,[15a] the high vowels close, and exceptions are not considered phonemically significant. Only Barrett attempted to distinguish open and close i, u, e, o. A cursory examination of his close vowels indicates that if he has one or more in a word one of them usually bears an accent in the corresponding form by Freeland where the syllable is long, but not necessarily the vowel. But Barrett sometimes marked vowels following the accent as close, so that his close vowels can be considered as significant regarding accentuation only by control on Freeland. But as this information may be of some value for dialects now probably extinct, and for the benefit of any future investigator who wishes to work on the theory that Barrett recorded a real phonemic distinction since lost, I have transcribed his standard vowels with macrons as capitals. On the other hand, Dixon's have been transcribed as long. Vowels described as mixed, unrounded, or obscure, are probably unrounded and I have transcribed them as ɥ, ǫ,

[15a] De Angulo described them as closed in Southern Maidu and SW. Wintun, however.

etc., as symbolic of unrounding. Freeland's ɪ and Kostromitonov's yerry have been transcribed ụ. Mixed vowels are transcribed ɨ, ê, etc.

ḱ, ť, etc., palatalized consonants; ṭ, ḍ, etc. retroflex apico-alveolar; g, d, b, etc., unaspirated occlusives;[16] ts, tš, etc., affricates; ʌ as in English but; ' glottal stop. ẹ denotes French u.

Kostromitonov's accent marks have been preserved as his grave accent is not explained. His lə has been transcribed l̀. Gatschet seldom recorded doubled consonants except ss which was probably only intended to show that the phoneme was surd. Mason's capitalized letters have been retained as he gave no key; Kroeber thought Mason may have employed this method of indicating intermediates.

MEANING is the same as that of the first word in each entry unless otherwise noted.[17]

SOURCES[18] for dialects unless otherwise noted: COSTANOAN Monterey, Taylor; San Francisco, Pedro Alcantara by Schoolcraft;

[16] These have not yet been fully described for any of the languages in question. I have the impression that they are usually unaspirated surds, possibly sometimes semi-sonant (sonancy beginning late?), and Newman stated that in some Yokuts dialects they are sonant. Maidu b and d are inspirated (= implosive) according to experiments by H. J. Uldall and de Angulo on the kymograph.

[17] In some instances, only the meaning but not the form given by Gifford is cited.

[18] Jaime de Angulo, The Patwin Language, Ms. [SW. Wintun]; Maidu Semasiology, Ms. [S. Maidu].

S. A. Barrett, The Ethnogeography of the Pomo and Neighboring Indians, UC-PAAE 6.1–332 (1908) [Miwok and SW. and C. Wintun]; The Geography and Dialects of the Miwok Indians, UC-PAAE 6.338–68 (1908); Myths of the Southern Sierra Miwok, UC-PAAE 16.1–28 [glossary 26–8] (1919).

Roland B. Dixon, The Pronominal Dual in the Languages of California, Boas Anniversary Volume, 80–4 (New York, 1906); Outlines of Wintun Grammar, (Frederic Ward) Putnam Anniversary Volume, 461–76 (New York, 1909) [N. Wintun]; Maidu, an Illustrative Sketch, Handbook of American Indian Languages, pt. 1, BAEB 40.681–734 (1910) [NE Maidu]; Maidu Texts, AESP 4 (1912) [NE Maidu].

Roland B. Dixon and A. L. Kroeber, The Native Languages of California, AA 5.1–26 (1903); Linguistic Families of California, UC-PAAE 16.47–118 (1919).

L. S. Freeland, The Relationship of Mixe to the Penutian Family, IJAL 6.28–33 (1930); Western Miwok Texts with Linguistic Sketch, IJAL 13.31–46 (1947); Language of the Sierra Miwok, Ms. [C. Miwok grammar]; Vocabularies of Central and Lake Miwok, Ms.

Albert S. Gatschet, Specimen of the Chúmĕto Language, The Amer. Antiquarian and Oriental Journal 5.71–3, 173–80 (1883) [S. Miwok text and grammatical notes].

Edward Winslow Gifford, Miwok Moities. UC-PAAE 12.139–94 (1916) [C. Miwok]; California Kinship Terminologies, UC-PAAE 18.1–285 (1922).

Hale's Indians of Northwest America and Vocabularies of North America, with an introduction by Albert Gallatin, Trans. Am. Ethn. Soc. 2.122 (1848) [Wintun by Dana], 123 [Plains Miwok by Dana], 124 [S. Maidu by Dana], 126 [La Soledad Costanoan], 128 [Coast Miwok].

Kostromitonov, Wörter aus zwei Sprachen Neu-Kaliforniens, Beiträge zur Kenntniss des Russischen Reiches 1.233–54 (1839) [Bodega Miwok; transliterated from Russian and reprinted with many errors in Powers' Tribes of California].

A. L. Kroeber, The Languages of the Coast of California South of San Francisco, UC-PAAE 2.29–80 (1904) [Monterey Costanoan 69–80]; The Dialectic Division of the Moquelumnan Family in Relation to the Internal Differentiation of the Other Linguistic Families of California, AA, n. s. 8.652–63 (1906) [very short vocabularies of Miwok]; The Yokuts Language of South Central California, UC-PAAE 2.165–377 (1907); On the Evidences of the Occupation of Certain Regions by the Miwok Indians, UC-PAAE 6.369–80 (1908) [short Yokuts vocabularies 372–4]; The Chumash and Costanoan Languages, UC-PAAE 9.237–71 (1910); The Languages of the Coast of California North of San Francisco, UC-PAAE 9.273–435 (1911) [Miwok 278–319]; California Kinship Systems, UC-PAAE 12.339–96 (1917); The Patwin and Their Neighbors, UC- PAAE 29.354 (1932) [SW Wintun, Suisun dial., by J. Alden Mason].

J. Alden Mason, The Mutsun Dialect of Costanoan Based on the Vocabulary of De La Cuesta, UC-PAAE 11.399–472 (1916) (Mason's San Lorenzo vocabulary in his postscript belongs to the Northern Costanoan group and is closest to the San Jose dialect).

Stanley S(tewart) Newman, The Yawelmani

San Jose, Kroeber; San Juan Bautista, de la Cuesta by Mason; San Lorenzo, Mason; Santa Clara, Powers; Santa Cruz, Comelias by Taylor; Soledad, Hale. MAIDU Northeastern, Dixon; Southern, de Angulo; other dialects, Dixon and Kroeber. MIWOK Central Sierra, Freeland; Coast (Marin and Bodega), Barrett; Bodega, Konstromitonov; Kawiya, J. H. R.; Plains, Dana; other dialects, Barrett. YOKUTS Tinlinneh, Powers; Yawelmani, Newman; other individual dialects, Kroeber; chief subdivisions of Yokuts, Dixon and Kroeber. WINTUN Central, Barrett; Southwestern, with long or close vowels, from Barrett, otherwise from de Angulo; other dialects, Dixon and Kroeber.

ABBREVIATIONS FOR SOURCES: (K) Kostromitonov for Bodega Miwok, Kroeber elsewhere; (A) de Angulo; (B-M) Barrett, 1919; (G) Gatschet; (Gif) Gifford; (DK) Dixon and Kroeber. Initial of the name serves as abbreviation for the others.

ABBREVIATIONS FOR DIALECTS are used only when directional C., Central; N., Northern; NE., Northeastern; etc. Those used for Miwok apply to the Sierra region only, thus Miwok C. means Central Sierra Miwok.

2. UNUSUAL SHIFTS.[19] Penutian occlusives present more problems than the continuants. The most important shifts to which Dixon and Kroeber called attention were the "very apparent sound equivalence —between s and k" which "holds good between Miwok and Costanoan in both directions, and again between Yokuts and Wintun. . . " But sound shifts are not like zippers which you can shift back and forth at will. What Dixon and Kroeber had actually found was a clue to a series of peculiar sound shifts. One of these shifts may have been due to contact with a front or mixed vowel, or, on the other hand, the mixed vowel may have resulted from contact with an unusual consonant; in the present state of our knowledge of Penutian, this is a question on which one may hesitate to make a categorical statement. All of these unusual shifts are represented by a guttural in one or more Penutian languages or dialects, but all of them are represented by non-gutturals in others. As we have complete series for the latter, the unusual shifts seem to be from Pn gutturals, but after experimentation with various reconstructions I have found none which are entirely satisfactory. And as gutturals are

[19] Probably generally shifts in the point of articulation.

Dialect of Yokuts, IJAL 7.85–9 (1932); Yokuts Language of California (New York 1944).

Stephen Powers, Tribes of California, Contributions to North American Ethnology 3.443–613 (1877) [Appendix, Linguistics, edited by J. W. Powell; Wintun 518–34, 1 N., 2 C., 3 N., 4 C., 5 SE., 6 C., 7 C., 8 SW., 9 N., 12 N.; Miwok and Costanoan 535–59; Yokuts 570–85; Maidu 586–600, 1 N., 2 N., 3 NE., 4–8 S.].

J. H. R., The Indians of California, San Francisco Wide West (June 8, 1856) p. 1, col. 2–5 [Kawiya and Kasowa Miwok, intermediate between S. and C. Miwok. Reprinted with very few errors by Taylor, q. v., May 25, p. 106].

Henry R. Schoolcraft, Archives of Aboriginal Knowledge (Phila.), vol. 2, 494–508 [San Francisco Costanoan by Pedro Alcantara and S. Maidu by Johnson], vol. 3, 428–34 [Marin Miwok and SW. Wintun by Gibbs], vol. 4, 406–15 [C. Miwok, Coconun and Kings River Yokuts, and C. Wintun, all by Adam Johnson].

Alex S. Taylor, California Notes. The Indianology of California, California Farmer and Journal of Useful Sciences (1860) Mar. 23, p. 42 [E. Yokuts and N. Wintun], Apr. 5, p. 58 [Santa Cruz Costanoan by Juan Comelias], Apr. 20, p. 66 [Monterey Costanoan by Taylor and a short vocabulary of the same dialect originally published at Madrid; Taylor's vocabularies republished in tabular form by P. de Lucy-Fossarieu, Les langues indiennes de la Californie, extrait du compte rendu sténographique du congrès international des sciences ethnographiques tenu à Paris du 15 au 17 Juillet 1878; 5–55 (Paris 1881)].

Although not within the field of this paper, the following completes the bibliography known to the writer on Penutian: Stanley S. Newman, Linguistic Aspects of Yokuts Style, in Yokuts and Western Mono Myths by A. H. Gayton and Stanley S. Newman, Anthropological Records 5.1.4–8 (University of California Press 1940).

not overwhelmingly predominant in any of the unusual series and as we have no Old Penutian to guide us, even reconstruction of *K¹, *K², etc. would be begging the question to some extent at present and X¹, X², etc. will be used as a convenient method of reference to the phonetic shifts involved, the establishment of these being the primary consideration at this time, as the occurrence of these shifts in some very common words has probably disguised the essential unity of the Penutian languages more than any other factor.

Wintun is the key to a number of these because, despite Barrett's probably inconsistent recording of the same phoneme, the different phonetic developments of the different primitive phonemes show up unmistakably in the three principal Wintun dialects, Northern, Central, and Southern (SW. and SE.). Thus we get

	N	C	S
X¹	ṫš	tš	ṫ, t
X²	q, k	t	tš
X³	ḳ	ḳ	ṫš
X⁴	q, k	k	ṭ
X⁵	t	ṭ	k

*X¹ (*ḱ' ?)

We may note first some Wintun examples:

N. ṫšu·p *awl* (L), C. tI-tšUp, SW tUp.

N. ṫšu·s *wood* (L),[20] C. tśok, SW tok *wood*, ṫok *tree*, SE tok *wood*.

C. tšol *mountain*, SW ṫOl.

C. tšUšak *mosquito*, SW tOsak.

C. tšit *fish*, SW. ṫiṫ, SE til (teal) (Bartlett).

While Barrett recorded both ṫ and t for SW Wintun in the above list, the former is no doubt correct. We would expect this from the ṫš and tš in Northern and Central Wintun respectively; and as Barrett recorded tok *wood* but ṫok *tree*, it is evident that he had not become familiar enough with the palatalized phoneme to record it except sporadically.

Two stems show that Miwok k corresponds to the above Wintun phonetic series:

1. Wintun N. ṫšina *to defecate hard* (L), tšenis *excrement* (B), C. tšenI *excrement*, SW tenI *excrement* (B), tenni *excrement*, tina *to defecate* (A); Miwok C. kUnaṭUs *excrement* (B), kụná·ṭ- *to defecate*, kụnáṭṭa *ass* (F), S. kụnaṭ *excrement*, N. kUnaṭụ *excrement*, Plains kẹna *excrement* (B), Bodega kee *excrement*, Lake ke· *excrement*, kono *to defecate* (F).

2. Wintun N. ṫšiṫ *black bear*, C. tšiṫ, SW. tIl-OkI; Miwok Coast, Lake kUle *grizzly bear*, *bear* (B), Bodega kulle *bear*, Lake kule *bear* (F).

Although the following stems have not been found in all the Wintun dialects, we may tentatively list them here:

3. Wintun C. tšai *white willow*; Miwok Marin kaiye.

4. Wintun N. tšululi *black* (DK); Miwok C. kulúlli, C., N. kUlUlI (B), Plains kUlUlU (B); Maidu S. kụlụlụ-m *blue*, kụlụ-m *black*, NE. kọlọ-m (DK).

5. Wintun N. watsa *cry* (D 475),[21] SW watU *to cry*; Maidu NE. -wak- *to cry out*; Miwok C. wakállallụ- *to shout, cry out*; Yokuts Kings River, N., Valley, Gashowa waxil *to cry* (K), Yawelmani wa·xal *weep* (N 5i); by metathesis, Costanoan San Juan Bautista warak, warka *weep, cry*.

The equation may tentatively be formulated as *X¹ = Wintun N. ṫš₄ (L), C. tš₃ SW ṫ₂t₂ (prob. ṫ), SE. t₂; Miwok k; Maidu NE. k₂ S. k₁; Yokuts x₁; Costanoan San Juan Bautista k₁?

Unfortunately for the solution of these most difficult phonetic equations in Penutian, the key language, Wintun, is probably one of the most divergent languages so that

[20] tšus (B). Gabb's tsukos (dsukos) shows the connection between the N. and C. Wintun forms. One may surmise that the primitive form for N. Winton was *ʧšuḱos which developed > *ʧšuḱus > *ʧšůus > ʧšu·s.

[21] Dixon and Kroeber seem to have used ts and tś interchangeably; cf. C. and N. Wintun tsiṫ *black bear* (DK) with N. Wintun ʧšiṫ (L), and C. Wintun tśiṫ (B).

we have data only sufficient to indicate the equation in that language, as in the following:

*X² (*q'?)

Wintun N. ṗo·qda *female, woman, wife*, ṗuqaila' *old woman, wife* (L), poqaíla *old woman* (D 476), C. pOtas *old woman*.

6. Wintun N. kila *liver* (L), C. telI, SW. tšela, SE. tšila; Miwok C. kúlla, Bodega kụlla (K), kʌlla (B), Marin, Lake kUlla; Maidu S. kọlla, NE. kulá, N. kụla; Costancan San Francisco sira (se rah), San Jose sire, San Lorenzo síre, San Juan Bautista sire *heart, mind.* (Also Pomo). *q́úlla?

7. Miwok C. kṷttụ *teeth* (F), kụtụ (B), S. kụtụ, N. kʌtụ, Plains kʌṭ (B.), Bodega kụt (K), gʌt (B), Marin kʌt, gʌt, Lake gʌt; Costanoan San Francisco sïit (se eet), Santa Clara sṷ́t-(-em) (sütem), San Lorenzo si·T, sit, San Jose, San Juan Bautista sit, Santa Cruz sit, Monterey sïit (ce-et). *q́ṷ́ttụ ? q́ṷ́ụt-?

8. Miwok C. wụ·k- *to make fire*, wṷ́k(tụ)- *to burn* (intr.), wụké *fire*, N. wụke *to burn* (K), C. N. wuke *fire* (B), S., Plains wụke *fire* (B.), Plains wíke *fire* (Dana), Coast wʌkI *fire*, Lake wIkI (B), wiki (F) *fire*; Costanoan San Juan Bautista wesi *to kindle, light.*

9. Miwok C. púkkuya *whirlwind*; Costanoan San Juan Bautista pusninyis *whirlwind*, pusi-n ? *to twist like a whirlwind.*

10. Miwok C. kíkkụ *water*, C., S. kIkụ (B), S. kíko (G 178), N. kIkʌ, Plains ki·k (Dana), kIk (B), Lake ki·k (F), Lake, Marin kIk (B); Costanoan San Francisco sïi (se ee) *water, lake, sea*, Santa Clara sii, San Lorenzo si·, Monterey si (ce), San Jose, Santa Cruz, San Juan Bautista si. Costanoan *sïi < *q́íq́ụ? Or Miwok by reduplication?

11. Miwok N. ụkụsụ *hand*, S. Ukuṣ, Marin UkUs *hand, fingers*, Lake 'ukku (F), Bodega ukku *finger* (K), UkU *fingers*, ʌkU *hand* (B), Plains iku (Dana);[22] Costanoan San Juan Bautista issu, isu, Santa Clara issu (eissoo) *arm*, San Jose išu *arm*, San Lorenzo išu, Monterey is *arm* (K), San Francisco rssu *arm.*[23] *q́q́q́us? Cf Miwok with Yuki *nails.*

12. Miwok N. hUkụ *nose* (B), hukaye *to smell* (K), C. huká·y- *to smell*, Coast, Lake hUk (B), Plains hUUk (B), Bodega uuk (K did not record h); Costanoan San Lorenzo xu·s, San Jose hus, San Francisco o̱os (o os), San Juan Bautista us *nostrils*, use *to smell, have an odor*, Santa Clara, Santa Cruz, Soledad, Monterey us, Monterey us, wus (K); cf. Maidu NE hí·kọ (208.27), hí·ku. *'úuq́ụ?

13. Miwok Bodega konO *bow* (B), Marin kOno, Lake kOnO; Costanoan San Jose šonok.

*X² = Wintun N. q_1k_1 (L), C. t_2 SW., SE $tš_1$; Miwok k; Costanoan San Juan Bautista s_7 Monterey, San Francisco s_5 Santa Clara, Santa Cruz s_4 San Jose $s_4š_2$ San Lorenzo $s_4š_1$.

*X³ (*k̓· ?)

Wintun N. k̓aha, -ayin *nails* (L), C. k̓ai, SW tšai, SE. t̓šai.

14. Wintun N. k̓ókos *flea* (L), C. kOk̓as,[24] SW. tšOtšo; Miwok C. N. kụkụsụ (B), Marin kUkUs, Bodega kụgụ, Bodega, Plains, Lake kʌkʌ (B,) Lake kuku (F). *k̓'oq́'ụs?

15. Wintun C. k̓IlI *antler*, SW. tšIli; Miwok C. kílli, Coast, Lake kIlli; Costanoan San Juan Bautista tširi *horn* (433); Yokuts (*horn*): Poso Creek éšil, Valley išel, Buena Vista îšul, Tule-Kaweah îšad (*l > d).

16. Wintun N. kiye·, -es *old* (L.), C. k̓Ias *old man*, SW. tšiyak *old man*; Maidu NE ké·yi < *kiye· < *kiya?

Compare also:

17. Wintun N. q́áli or q́ali-t, -·n, -m *charcoal* (L), N. C. kali *coal* (DK); Yokuts (*coal*:) N., Valley šalu, Kings River šal̓an, Yawelmani sa·luw, Tule-Kaweah ša-pan, Buena Vista soolin; cf. with the last, Miwok

[22] ekụ (B).

[23] Written Rs su, a misprint for Es su, i. e. issu? Or is it an attempt to express ṣṣu?

[24] I. e. k̓Ok̓as?

C. kúlla *coal, dead coals*, S. kúlla *coal* (G 73), Bodega koi *firebrand*.[25]

*X⁴ (*q?)[26]

Wintun N. bukul *ashes* (B), buqa·s *a dump*, buqa· *to dump* (L), C. pUk, SW pUṭ; cf. Yokuts Tule-Kaweah, Poso Creek ha-paš < *ha-puš by assimilation?

18. Wintun C. tšaik-tšaik *valley bluejay*, SW tšaiṭ (B) tšayit *bluejay* (A); Miwok Lake šayits *bluejay* (F), šaiyIts (B), Coast ṣaiyItš, Plains saiIsi, N. ṭaiṭI, C. ṭayíš-mu *bluejay*, S. ṭaitšU; Yokuts Yaudanchi ťaišu-(-de·tš) *jay*; Maidu S. tsáit. Cf. NE. Pomo.

*X⁵ (ḳ?)[27]

19. Wintun N. not *arrow*, C. noṭ (nort), SW nOkO; Maidu NE. noko· (204.8); Yokuts Yaudanchi, Tinlinneh nokó-tši *knife* (P). All < *flint?

The following could belong in this series, which perhaps accounts for the unusual shift in the second consonant:

20. Wintun SW. kUk *clam*; Miwok Coast kUṭa.

If the second consonant of no. 20 is from *X⁵ and if *X⁵ became ṭ in other Miwok dialects besides Coast Miwok, then the unusual shift in the initial of the following comparison is explained:

21. Maidu S. kodok *sand-hill crane*; Miwok S. ṭoṭókon (B-M), C. totokono (Gif. 151),[28] Bodega totolli *crane*.[28]

This completes the survey of unusual phonetic shifts in Wintun where gutturals are found there or in some other Penutian language. But we must note a peculiar shift of k of the Southern (Monterey) dialect of Costanoan to w in the northern dialects, with the San Juan Bautista dialect hovering in between:

*X⁶ (ḳ ?)

Monterey ruk *house* (K),[29] San Juan Bautista ruka, Santa Clara gruwá-(-m),[30] Santa Cruz rua,[31] San Jose ruwai, San Lorenzo 'rúwai', San Francisco riwa.[32]

Monterey aks *salt*, San Juan Bautista akkes, awes, Santa Clara awes, Santa Cruz aues, San Jose aweš, San Francisco awiš.

Additional examples of fluctuation in San Juan Bautista: wakisaes, wawisaes *coyote*, lakke, lawe *rise, climb* (*of sun*), sikke-n, siwe-n *break wind*.

We have one example of this unusual shift with Yokuts and Miwok correspondences, and a peculiar shift occurs in one of the dialects of the latter:

22. Costanoan Monterey ukis *drink*, San Juan Bautista ukk-izi, -esi, -osi, uk-nesi, Santa Clara weto-, Santa Cruz uit, San Jose uweto, San Francisco owato; Yokuts Yaudanchi, Yawelmani uk-, E. uk-un; Miwok C. 'úššu-, S. uhU (B), úhha (G 175), N. UhU, Bodega, Lake UssU (B), Plains Use (B).

Besides the unusual phonetic shift in Costanoan, we may note the peculiarity of the above stem in Miwok. While Central Miwok š regularly becomes h in Southern Miwok but s in Northern Miwok, in this one stem it becomes h in the Northern dialect as well. The consonant in this word evidently

[25] l is generally preserved in Bodega. But for occasional *l > y in coastal Miwok, see Marin in no. 49, Lake in no. 55.

[26] While a simultaneous radical-velar and apico-alveolar occlusion is not impossible, it would seem to be at least an unstable phoneme. More likely would be a radical-velar occlusion with the blade of the tongue in retroflex apico-alveolar position except that there is no apical alveolar contact (the position of the blade would be that for Russian yerry as I make it). Extending and leveling the tongue would produce ṭ as found in this series in SW. Wintun. This is, however, merely a suggestion. The suggested reconstruction symbol here and for *X⁵ are intended primarily to convey the idea that the Pn phonemes are represented in some Wintun dialects by a guttural and in others by a retroflex and that the distribution of these is not the same in *X⁴ as in X⁵.

[27] See n. 26.

[28] ṭ not distinguished from t.

[29] rouk *house, hut* (T).

[30] gr to record uvular r?

[31] uw, w recorded as u in this dialect.

[32] Written ree wah, which looks like a misreading by the printer of manuscript ru wah.

comes from a different Penutian phoneme than any discussed heretofore.

The above unusual phonetic changes have been treated as if each represented a different Pn phoneme, which is probably generally the case. But some may of course be due to special conditions affecting some other Penutian phoneme. Thus one may note that in the last series, the consonant is doubled in four San Juan Bautista words against two where it was not so recorded or transcribed, while the consonant in the one Miwok correspondent is certainly doubled. Whether this series of phonetic shifts arose only when some other Pn phoneme was doubled is a question which only further investigation can determine.

3. Yokuts x = k of the other Pn languages:[33]

23. Yokuts Yaudanchi xay *speak*; Costanoan Monterey kai *say* (K), San Juan Bautista in-kai ? *speak, talk, say* (but M 440: *what? (say)* (interrog.)).[34]

24. Yokuts N., Valley xat *eat*, Yawelmani xat- (K), xata (N); Costanoan Monterey kát *eat!* (K).

25. Yokuts N., Valley, Kings River wa-xaẗ *crane*, Yaudanchi wa-xiẗ; Wintun N. kat, SW. wak, woksu; Maidu N. waksi; Miwok Lake wa·k (F).

26. Yokuts Yaudanchi xapad *finger, toe*; Costanoan San Juan Bautista kapis *little finger*.

27. Yokuts Tule-Kaweah xomot *South*; Maidu S. komo (DK), komóu (A).

We may now consider Penutian phonemes which are everywhere represented by gutturals:

4. *g

28. Yokuts Valley, Tule-Kaweah goẗ *tule*, Kings River ḳoyuš, N. ḳoyiš; Maidu S. kuye *round tule*; Wintun SE guye.

29. Yokuts Valley godi *small*, Yawelmani gude· (N 6t), N. gotetš; Costanoan San Juan Bautista kuti; Wintun N. kúte (D 475).

Yokuts Yawelmani guṣe *tiny* (N 6t); Miwok Lake kUšši; Costanoan Santa Clara kušue-mini *small, little*, San Francisco okluš kuš (o cloosh cush) *infant, child*; Wintun SE. kušun *small*, SW. kuši *small* (DK).

Costanoan San Jose kutš-(-uwis) *small*, San Lorenzo kutš-(-úiš) *it is small*; Wintun SW kUtši (B), kutši (A); Miwok Lake kuẗši (F). See Pomo.

30. Yokuts Poso Creek gen *my*; Miwok all dialects kanni *I* (DK), Bodega, Lake kannI *I* (B), Marin kanni *I*; Costanoan San Jose kana, kanak *I*, San Francisco kana *I*, San Juan Bautista, Santa Cruz kan *I*.

31. Yokuts Yaudanchi go·ku-(-de·tš) *raven* < *gá·kul-de·tš; Miwok Bodega kakali (K), kagalI *crow* (B), Marin kakalis *crow*, Lake ka·kali *crow* (A), C. ká·kulu *crow*, S. kákUl (B-M); Costanoan San Juan Bautista kakari, Monterey kakaru *crow* (K), kakoro *crow* (T); Wintun SW kak *crow* (A, B). *gá·kuli.

5. *ḳ

32. Wintun S. ḳana *to sleep*, SW ḳaná (M), ḳana (B), kana (A), C. keno (DK), N. xi·na (L), xina; Yokuts Poso Creek ḳeneu, Gashowa ḳaṅwá *one who was asleep* (N), Yaudanchi ḳênụ *to lie*, cont. ḳânuw-.

33. Wintun C. ḳawi *mortar basket*, SW kawi (B), Miwok Lake xawI,[35] cf. C. kawá·tši *pestle*.

34. Wintun S. ḳira, ḳir *cloud*; Yokuts Valley ḳilei, Kings River ḳelei, Poso Creek ḳeli, Tule-Kaweah ḳêdai; cf. Miwok Marin ya-kal.

[33] No clue has yet been found to the equivalences of x recorded in the other Penutian languages than Yokuts. In Costanoan the same stem has frequently been recorded with both x and k. From Newman's statement regarding Yokuts, that "At a conversational rate of speed all forms of glottalization are indicated by a rasping quality of the voice, the result of an incomplete glottal closure," one may suspect that ḳ was sometimes recorded x in languages other than Yokuts. That language has been too well recorded to leave any doubt of the existence of x in many words.

[34] Perhaps cognate to Costanoan Monterey xai *mouth* (K), San Juan Bautista xai *mouth*, xahie *voice*, Soledad hai *mouth*.

35. Wintun N. ḳab-ma· *to trap (rabbits, salmon,* etc.) (L), SW ḳap-ma *to catch*; Maidu S. ḳape *to have.*

36. Yokuts Yawelmani ḳaṭ-*snap the teeth* (N); Miwok C. kátmu- *snap the jaws,* katuttš-(-uttšu-) *to gnash the teeth*; Costanoan San Juan Bautista katu ? *kill with the teeth (lice).*

37. Yokuts Yaudanchi ḳewe·t *back;* Miwok C. ké·wu, Kawiya kéwu, S. kévui-, kevu- (i. e. kéwu) (G 176); Maidu NE kí·wi·; cf. Wintun SW. kowa. *ké·wu?

38. Yokuts Yaudanchi ḳašop *mosquito* (K), Tinlinneh kassó·p (P), Yawelmani ḳaṣuṗ; Costanoan San Cruz kašup. *ḳaṣúṗ.

39. Yokuts N., Valley, Kings River *baḳil* flea, Tule-Kaweah baḳid, Yaudanchi ḅa·ḳid (incorrect for -ḳid), Yawelmani ḅa·ḳil, Poso Creek baḳel; Costanoan Monterey bakeliw *wood-tick* (K 80). *ḅa·ḳil.

40. Yokuts N. (Lathrop dial.) bokos *manzanita* (*m > b in this dialect);[35] Maidu S. moḳkos *small manzanita*; Miwok C. mókkušu.

41. Maidu S. maḳaw *jaw* (cf. muḳáu *fang*) (A), máḳku· (maḳ-kūh) *face* (P); Miwok C. má·kašu *face.*

42. Yokuts Yawelmani ṫsaḳ *blackbird,* Yaudanchi tšak; Maidu S. tsak *bluebird*; Wintun SW. tšakatU; Miwok Lake tsakatU.

43. Maidu S. to·loḳ *grebe*; Wintun SW. tOłOk *mud-hen*; Miwok Lake ṭOłOk *mud-hen* (B), tolok *mud-hen* (F).

Leaving out of consideration nos. 42 and 43 with glottalization on the final consonant of the stem, where only Newman has frequently recorded it, the equation we get from the above comparisons is *k = Yokuts Yaudanchi k_3 N. k_1 Kings River, Tule-Kaweah, Valley k_2 Yawelmani, Poso Creek k_3 Gashowa k_1; Wintun S. k_2 SW. k_2 k_2 N. q_1 x_1 (L), C. k_1; Maidu S. k_3; Miwok C. k_4 S., Kawiya k_1 Lake x_1; Costanoan Monterey k_2 San Juan Bautista, Santa Cruz k_1. We may infer that glottalization is probably preserved in Yokuts, Maidu, and Wintun, dropped in Miwok and probably in Costanoan.

[35] As noted by Kroeber 1908, 373. Vocabulary by Barrett.

6. *k?

A summary of the Penutian phonemes considered above appears in Table I. We may note that the only Penutian phonemes represented in all languages and dialects by gutturals are *g and *k. Yet in California Indian languages an aspirated surd guttural is generally one of the most common phonemes and it seems extremely unlikely that Penutian was without one. But the only comparisons in which the gutturals do not fit into the phonetic development of one or more of the phonemes in the table are:

Yokuts Poso Creek kololis *tule*; Miwok Lake kOl; Wintun SE sa-kulul.

Yokuts Yaudanchi koṷtšun *man,* pl. koṷtšai; Miwok Lake kó·tsa *person* (F); Costanoan San Lorenzo Kottšo *young man,* San Jose kotšo *boy.*

From the fact that Pn *g and *k are represented in all languages and dialects by a guttural, one would expect Pn *k to also be represented in all languages and dialects by a guttural, probably usually k. And a considerable list of words is assembled below in which the only guttural is k and one may suspect that the Pn phoneme represented is *k. And yet because the genetic relationship of the Penutian languages is not close and recording was not coordinated, so many gaps occur in the comparisons that all of the k's found in these comparisons may be assigned to one or more of the reconstructed Pn phonemes shown in the table.

An indication of the Pn phoneme to which the guttural consonant of a comparison may be assigned is given at the end of each entry. Those within parentheses indicate that the assignment may be made because of lack of information on that particular phoneme.

TABLE I

Summary on Non-Nasal Gutturals

	Wintun				Yokuts									Miwok							Costanoan							Maidu	
	N.	C.	SW.	SE.	N.	Val.	Tule	Kings	Yaud.	Yawel.	Poso	Buena	Gash.	Coast	Bod.	Marin	Lake	N.	C.	S.	Pl.	Baut.	Mont.	SCl.	SCr.	SJ.	SL.	SF.	S.	NE.
*g	g_1k_1		k_2	g_1k_1	g_1	g_2	g_1	k_1		g_2	g_1				k_2	k_2	k	k_1	k_2	k_2	k_1	k	k_1	k_1	k_1	k_2	k_1	k_2	k_1	
*k	q_1	k_1	k_2	k_2(S.)	k_1	k_2	k_2	k_2	k	k	k		k_1				x_1		k	k_1	k_1	k	k_2		k_1				k	k_1
*X¹ (k'?)	x_1 $t\check{s}$	$t\check{s}$	k_2 t'_2t_5	t_2	x_1	x_1		x_1		x_1			x_1	k_1	k_2	k_1	k_2	k_2	k	k_1	k_2	k_1?							k_1	k_2
*X² (q?)	q_1 k_1	t_2	$t\check{s}_1$	$t\check{s}_1$										k_2	k	k	k	k	k	k	k	s	s	s	s	s_4 $\check{s}_2$	s_4 $\check{s}_1$	s		k_1?
*X³ (k'?)	k_2 q_1	k_4	$t\check{s}_4$	$t\check{s}_1$	$\check{s}_1$	$\check{s}_2$	$\check{s}_2$	$\check{s}_1$		s_1	$\check{s}_1$	$\check{s}_1$ s_1		k_1	k_2	k_1	k_2	k_1	k_2	k_1	k_1	$t\check{s}_1$								k_1
*X⁴ (q̣?)	(L) k_1 (B) q_1 (L)	k_2	t_2				$\check{s}_1$?		$\check{s}_1$		$\check{s}_1$?			$t\check{s}_1$			ts_1	t_1	$\check{s}_1$	$t\check{s}_1$	s_1								t_1	
*X⁵ (k?)	t_1	t_1	k						k_1						t_1?				t_1?	t_1									k_1?	k_1
*X⁶ (k?)									k_1	k_1					ss_1		ss_1	h_1	$\check{s}\check{s}_1$	hh_1	s_1	k, w	k	w	u	w	w_1	w		
*x	k_1		k_1		x_2	x_1	x_1	x_1	x	x_1							k_1					k_2	k_2						k_1	k_1

44. Wintun SW. kau-kau *crane*; Maidu S. ál-kau *heron*. *g, (x).

45. Wintun SW. kaḍa *deer-snare* (B), C. tšoṭ-kaḍa; Miwok Coast kaṭ-tšen *deer-snare, string*. *(g, x).

46. Wintun SW. kapala *bark*; Maidu S. kapúm. *g.

47. Wintun SW. tšayakamen *salamander* (B); Miwok Lake tsaiakamen. *g, (x).

48. Wintun C. kol *mouth* (B), kol (Bartlett), N. qo·l *mouth, language* (L), SE. kol, SW. kol (B, A), ko·l (S); Maidu S. ko·l *nose* (P), kol *nose* (ko·l *to snore*) (A), koli *nose* (Brown ko-le; Ross kóle). Primitive meaning *lower part of face*, or as *muzzle* would be applied to animals. *g, x.

49. Wintun C. kole *foot* (DK), kolI *leg*; Miwok N., Plains kolo (B), Plains kólo *leg*, Lake kOllO (B), kolo (F), Marin kOyo;[36] Costanoan San Francisco kolo, Santa Clara koró-(-m) *leg, toes*, Santa Cruz koro *leg*, San Juan Bautista koro, Monterey koro (K), San Lorenzo koró·. Miwok-Costanoan *kolo? *g, (x).

50. Miwok C. komé *moon*, N., S., Plains kOme, Lake kome (F); Costanoan San Francisco kolme, Santa Clara kórme, San Jose korme, San Lorenzo Kormei. *Xólme? *k̓, g, (X^1, x).

51. Miwok Plains kalI *smoke* (B), Lake, Coast kal, Bodega káál̓; Costanoan San Juan Bautista, San Jose kar.[37] *k̓, g, (X^1, x).

52. Miwok Coast kai-kai *bitter*; Costanoan San Juan Bautista kai *to smart, be strong, bitter, to bite*. *k̓, g, (X^1, x).

53. Miwok C. kasu̧·ṭ- *to bite*; Costanoan San Juan Bautista kase, Monterey kaš *ate* (K 80). *k̓, g, (X^1, x).

54. Miwok Plains ṭanuka *bow* (B); Costanoan Santa Clara tanúka-(-m), San Francisco tᵖanuka.[38] *k̓, g, (X^1, x).

55. Miwok Lake ka·y *dry* (F); Maidu S. ekal. *Xa·l?[39] *g, X^1, X^3, (X^2).

56. Miwok Lake kelle·me *potato* (F); Maidu S. kelme *tuber*. *g, X^1, X^3, (X^2).

57. Miwok S. kIlík-kIla *small species of hawk* (B-M) (-kIla by metathesis from lIká *chicken hawk*); Maidu S. kilík-lik *sparrow hawk*. *XilX-liXá? *g, X^1, X^3, (X^2).

58. Miwok C. ṭó·ko·ko *burrowing owl*; Maidu S. tókkok; Wintun SW. tok. *g, (x).

59. Miwok Lake kUpUm *fingers*; Wintun SW. kUpUm. *g.

60. Miwok S. koyyok (coy yock) *salt* (Johnson), Marin koyó (ko yoh) (Gibbs); Yokuts Yaudanchi kuyo (K), kúyu· (P), Tinlinneh kúyu·, Yawelmani kuyú. *Xuyú. (*X^2)·

61. Maidu NW. kamini *to dance*; Yokuts N., Kings River, Tule-Kaweah kám. *X^5, (X^2, X^6).

62. Yokuts Yaudanchi tšik *to love*; Costanoan San Juan Bautista otšiko ? *to desire, have desire, covet*; cf. Wintun N. tšokíma (P). *X^5.

63. Miwok S. tolko *ear* (B), tólkoho (G by P), Kawiya tólkosu, C. ṭó·košu (F), ṭokosU (B), N. ṭokosu̧; Costanoan San Clara túkšuš, San Lorenzo TuKšuš, San Jose, San Juan Bautista tuksus, Monterey tuuks;[40] Yokuts N., Valley, Tule-Kaweah tuk (DK 62), Yawelmani tuk̓, Kings River, Poso Creek tok, Chauchila to·k̓ (N); Maidu S. tuka (tu ca) *hear* (Johnson). While this does not fit any of the Pn phonemes reconstructed in the table, Ṇewman recorded k̓ and very few other authors noted k̓ when a stem final. As his is the latest scholarly work published in this field and certainly one of the best, it seems probable that the guttural consonant in the above comparison

[36] For -l- > y, cf. Bodega in no. 17, and Lake in no. 55.

[37] San Juan Bautista also kat. The occasional recording of r and t in the same Costanoan word may indicate a cerebral ṛ with a single flip of the tongue tip.

[38] The initial is written p. The reason for the transcription tᵖ will be explained at another time.

[39] For -l- > y in the coastal dialects, see no. 49.

[40] The r of San Francisco tu o rus is probably not an attempt to record any likely phoneme, but a misreading of very illegible script.

was *k. Moreover we do not know what Mason's K signified except that it was something different from k. And in the third place, there may be two different roots here; cf. S. Miwok with Gashowa ṭolkoṅó *hole* (N).[41]

Thus, while many of the comparisons just cited probably do contain Pn *k, as far as we know now, all of them may contain instead some other Pn phoneme. In the initial stages of comparative work, comparisons are too often grouped more or less arbitrarily as indicative of a certain phoneme when conflicting evidence points to some other possible conclusion; it seems preferable to evaluate the materials more critically and list the above comparisons as unclassified for the present. Either from new recordings or those already in existence but inaccessible to the author, some comparisons may eventually be extended to other languages and dialects so that their phonemes may be definitely assigned.

7. k and '.

In a few instances k appears to have been replaced by a glottal stop:

Costanoan San Juan Bautista lalak *goose*, Monterey laalk;[42] Wintun SW. lalák *white geese* (M); Maidu S. la·lak *little goose*; Yokuts Yaudanchi lálá, Yawelmani lálá *wild goose*.

Costanoan Santa Clara wilka *lightning*, San Francisco wilka-warap; Wintun N. waluka; Maidu NW. cf. -winaka; Yokuts Kings River walam-wiláa, Tule-Kaweah wadam-wida (i. e. wadam-wida· < *walam-wiláa?), Valley walam-wiya.

Miwok Lake loklo *meadow* (F); Maidu S. lólo *valley*.

From work on the comparative grammar of Tibeto-Burmic languages where inexperienced recorders were inclined to record a glottal stop as k, I would be inclined to think that this had been the case also in the above examples except that the la-lak, etc. in the first of the above examples is evidently a reduplicated form of Miwok Lake lakka *goose* (F); Maidu N. lákka (P.)[43] I am confident that Freeland would not have recorded kk for a glottal stop. Consequently, the recording of a glottal stop in the above words is probably either erroneous for k or a glottal stop has arisen from the latter under unknown conditions.

8. *ŋ[44]

Miwok C. hóŋŋu *egg*, S. hóŋu (G 178); Yokuts Yaudanchi hóŋ; cf. Maidu S. ho·m *nest* < *hon-m < *hoŋi-m?

Miwok C. náŋŋa *man*, C., N., S. naŋa (B), S. náŋa *man, male* (G 178); Yokuts N., Valley no·no (K 344).

Yokuts Tule-Kaweah hoŋ-hoŋ *heart*, Poso Creek hoŋ-heŋ, N., Valley hon-hon, Kings River hono-hon; Maidu NE honi (DK), S. hon.

Yokuts Yaudanchi hoŋ *to breathe*; Maidu S. hon-pin.

Yokuts Tule-Kaweah toŋaš *digger pine*, N., Kings River ton, Gashowa to·n *pine nut* (N); Maidu NW. toni-m-tsa, S. ton.

Yokuts Tule-Kaweah hoŋoš *testicles* (K 332), Valley honoš, honoṫ (K 332); Wintun SW han.

*ŋ = Miwok C. N. S. ŋ; Yokuts Tule-Kaweah, Yaudanchi, Poso Creek ŋ, N.,

[41] I do not believe this to be the case, but there may always be this doubt as we shall probably never have enough materials to decide which phonemes of different phonemic clusters disappeared in different languages and dialects.

[42] This looks like a misprint, but cf. Monterey tuuks *ear* in no. 63 with tuksus, etc. in other Costanoan dialects.

[43] Moreover, we probably have a derivative in Maidu S. ullak *merganser duck*; Miwok S. ilak-na *duck, sp.* (B-M). We also seem to have the same root with a back vowel: Miwok Bodega lôak *goose*; Wintun N. (?) lok-lok (T); Costanoan San Juan Bautista luk-luk; cf. Maidu S. lok *covey*.

[44] Dixon and Kroeber's suggestion that this phoneme was due to Shoshonean influence operating independently in Yokuts and Miwok (DK 81–2) was based on wrong comparisons.

Valley, Kings River, Gashowa n; Maidu S., NE., NW. n; Wintun SW. n_1?

While some phonetic equivalents of primitive Penutian phonemes have been established here with certainty, and others as probable, it is not intended to minimize, but rather to emphasize the shallow foundations on which some of the other equations are based. Despite the fact that some excellent scholars have recorded some of these languages, a great deal more remains to be recorded.

THE PHONEMIC STRUCTURE OF PROTO-ZAPOTEC

MORRIS SWADESH
NEW YORK CITY

0. General remarks
1. Obstruents
2. Conditioned changes
3. Mixed clusters
4. Sonorants
5. Conditioned changes
6. Glottal stop
7. The vowels
8. Accent and tone
9. Geographic location

0. Though modern varieties of Zapotec differ considerably in their consonant systems, they all agree in showing some sort of weak-strong contrast among obstruents. In the sibilants there are typically strong voiceless fricatives contrasting with weak ones, which are commonly but not necessarily voiced; we find in different dialects s:z, š:ž, θ:d. Other pairs involve a strong voiceless stop or affricate against either a weak stop or a weak spirant, as p:b, t:d, k:g, č, ǰ. Sets of three have been developed in the dialect of Ixtlan, partly as the result of Spanish borrowings, including p:ꜰ:b, k:x:g, t:θ:d, č:š:ž, and the incomplete set c:s (phonemes found only in Spanish borrowings are in small capitals). Note that Ixtlan b d g are fricatives. Cuixtla b d g are sometimes affricate in initial position but always fricative in non-initial, and the same is evidently true of z s θ.[1]

Many Spanish words have been adopted into all the Zapotec dialects and the sounds have been fitted into the Zapotec scheme. Indeed they have bolstered the weak-strong contrast, since the strong stops p t k are not very common in original native elements and have become much more so by the addition of Spanish words. (Incidentally, Spanish s is taken over in some dialects as z or ẓ, that is, as a weak rather than strong spirant.) Nevertheless, historical and internal evidence show that the weak-strong dichotomy existed before the coming of Spanish-speaking people.

It is interesting that this contrast, which occurs in all the varied dialects[2] of modern Zapotec and which dates back at least several centuries, seems not to be an original feature of Proto-Zapotec. Instead the weak consonants represent the normal development from simple original consonants, and the strong ones usually stem from original consonant groups. This conclusion is supported by the situation in the related Cha-

[1] The material used in this paper was originally brought together in 1941 during the preparation of a chapter on the Zapotec languages for a projected work of the Institute of Social Studies of the University of Mexico under the direction of Lucio Mendieta y Nuñez. Vocabularies and paradigms were taken down by the writer himself from a number of Zapotec speakers and in addition a vocabulary from Yatzachi el Bajo was supplied by Otis and Mary Leal and another on Tehuantepec by E. R. Valdivieso. Cuixtla and Chatino words were taken from Jaime de Angulo and L. S. Freeland, The Zapotekan Linguistic Group, IJAL 8.113–20 (1934). The recordings in the last source have been reinterpreted phonemically as well as possible on the basis of internal evidence; the original spelling is not given here but can readily be found in the place mentioned. One detail in the Yatzachi recordings has been reinterpreted, namely unaccented ʌ is taken to be a positional variant of e; whether this is correct or not does not essentially effect the theory of historic development as discussed here. Tones were not included in the Yatzachi record. The present author is responsible for the tones recorded for Tehuantepec as well as for Ixtlan.

The kind help of Valdivieso, of the Leals, of Perez of Ixtlan and a number of other native Zapotecs is gratefully acknowledged.

[2] Though it is convenient to speak of 'dialects' throughout this study, the main divisions of Zapotec are actually divergent enough to be classed as separate languages.

tino language, which has only one type of obstruent. On the other hand, the present Zapotec dichotomy agrees with the unrelated or only very distantly related Mixtec and other neighboring languages to the west and north of the Zapotec region. These facts suggest the importance of the weak-strong contrast in probing the prehistory of languages and groups in the Oaxaca region. Evidently Mixtec and Zapotec were not in geographic contiguity before Proto-Zapotec times but have since had a long period of close contact.

Towards the solution of such problems, the present paper sets forth some preliminary conclusions about the phonemic structure of Proto-Zapotec. Since no adequate phonemically-controlled survey of Zapotec dialects has as yet been made, it is convenient to base our study on a small sampling of materials from selected representative dialects: Ixtlan, Yatzachi el Bajo, Tehuantepec and, when the needed form is available, Cuixtla. These correspond to main divisions of Zapotec: Sierra de Juarez, Sierra de Villa Alta, Valley-Isthmus, and Miahuatlan. Geographically these are northwest, northeast, central and south, respectively. The Valley-Isthmus division covers the greatest amount of territory.[3]

1. The stops and spirants of Proto-Zapotec evidently were p, k, t, č, s, š. They were found only in syllable initial, either alone or in groups of two. Evidence to be discussed later (§3), suggests that the clusters must have once been varied, but the bulk of ordinary comparisons seem to indicate geminates (pp, kk, tt, tč, ss, šš) to have been the principal type. The manner in which the modern weak-strong contrasts arose can be seen from the summary of main developments given at the end of this paragraph. After the assumed Proto-Zapotec phoneme, phonemes from the daughter dialects are given in order: the Ixtlan, the Yatzachi, the Tehuantepec, the Cuixtla. Parentheses in Ixtlan clusters, such as (p)p, are to show that the reflex in word initial is simple and in medial position geminate. In Ixtlan b d g are always spirants; in Cuixtla they are spirants after vowels, stops after nasals, probably affricates in initial position. In Cuixtla, *θ* and s vary between affricate in initial to spirant in non-initial position. There is no actual example showing the Cuixtla reflex of original t, but, by noting that **č* > z while **tč* > s and **tt* > *θ*, it may be reasonably guessed that Proto-Zapotec **t* became Cuixtla d (weak dental spirant).

**p* > b, b, b, b; **pp* > (p)p, p, p, p; **t* > t, d, d, d(?); **tt* > (t)t, t, t, *θ*; **s* > d, z, z, t; **ss* > (*θ*)*θ*, s, s, t; **š* > ẓ, ẓ, š, ẓ; **šš* > (ṣ)ṣ, ṣ, š, ṣ; **č* > c, ǰ, j, z; **tč* > (t)c, š, č, s; **k* > g, g, g, g; **kk* > (k)k, k, k, k.

In many cases, the modern weak-strong contrast simply reflects the old relation between single consonant and geminate group. However, it does not always happen thus. Ixtlan retains the geminate groups in medial position. In initial position, t and tt and č and tč fall together in Ix. In Tehuantepec, **š* and **šš* fell together completely. Likewise **s* and **ss* fall together in Cuixtla t. A t:d contrast arises in Ix. through the dentalization of s, which appears as the weak member of the pair. Something similar happens in Cu. except that the reflex of **s* (and **ss*) is strong and that of **t* is weak.

In the following examples of normal correspondences, the forms from the control dialects are listed in order followed by a reconstruction. In addition, the Chatino is given when it is known and comparable.

Initial **p*: **1.** bé?, be?, bì *wind:* **pé?*. **2.** békkú?, beko?, bìku? *dog:* **pè?kkú?*. **3.** bɨ̀ú?, byo?, bè?ó *moon:* **pê?ó*; Chat. kŏ (= kwŏ, and kw from **p*, as in 6, 7, 18, 19, 20, 82). **4.** beré?, bɉe?, birí *ant:* **peré?*. **5.** bèlá?, bele?, bè?la *meat:* **pè?lá*. **6.** bèllá, beL, bé?nda *snake:* **pé?nlá*; Chat. kwìnǎ. **7.** bêlla, beL (ya?a), bèndá *fish:*

[3] See the map given by Angulo and Freeland, IJAL 8.37 (1934).

*pênlá; Chat. kwlà. **8.** bêlia, belγw, bèlé *star:* *pêlyó. **9.** bêlla, —, bèle *flame:* *pêlya. **10.** bía, beγw *cloud:* *péyo. **11.** bêdu, —, bìzu *bee:* *pêsu. **12.** bêθθu, bso *adobe:* *pêssu, *pessú. **13.** begùθθa?, bgose? *spindle:* *pekùssa?. Medial *p: **14.** túbí or tú, to, tùbi, θíb *one:* *ttŭpí, ttu. **15.** ʒíbi, ʒib-, šíbi *knee:* *šípi. **16.** tùbi?, dobe?, dù?bi? *feather:* *tù?pi?. **17.** ubícá, bwiž, gublja *sun:* *wuplčá; Chat. wčá.

Medial *pp: **18.** čúppá, čope, čùpá, čóp *two:* *ttyúppá; Chat. tkwà. **19.** táppá, tap, tàpa, θáppá *four:* *ttáppá; Chat. hàkwá. **20.** ʂùppú?, ʂop, šò?pa, ʂòpá *six:* *ššò?ppá (the Ix. final has perhaps been modified to conform with *five* and *eight*); Chat. skwà.

Initial *k: **21.** gàžú?, geye?, gà?yu, gàyá *five:* *kà?yú; Chat. tk?yú. **22.** gácí, gaža, gàjé, gazá *seven:* *káčé; Chat. ktí. **23.** gă, ga, gà?, yè?í *nine:* *kă?, *ke?i; Chat. kà. **24.** gálliá, galγe, gàndé *twenty:* *kánlyá; Chat. klà. Medial *k: **25.** uága, wage, uàga *rat:* *wáka. **26.** nàga, nag-, diàga *ear:* *nàka, tiàka. Also 13.

Initial *kk: **27.** kuâ, kwa, kùba *dough:* *kkûpa. Medial *kk: **28.** îkkia, yičγ-, ike, yèk *head:* *yîkkya; Chat. ké. Also 2.

Initial *t: **29.** tê, de, dè *ashes:* *tê. **30.** tá?a, da?a, dà?a *mat:* *tá?a. **31.** tŭ, do, dò?a *rope:* *tŏ?a. **32.** túá?, dwa?, dòbá *maguey:* *tópá?. Also 16. Medial *t: **33.** dète?, zede?, zìdi *salt:* *sète?. **34.** žêti, yid, gìdi *skin:* *kêti. **35.** làstó? (< *làctó?), laždawa?-, laJidò *heart:* *lačitàwá?.

Initial *tt: see 14, 19. Medial *tt: **36.** cítta, žit, jìta *bone:* *čítta. **37.** žéttu, yit, gìtu *squash:* *kéttu. **38.** ètta, yet, gèta, yet *tortilla:* *yètta; Chat. ythà.

Initial *č: **39.** cîla, žil, jìà *comal* (earthenware pan): čîla. **40.** cúmmí, žome, jùmmí *basket:* *čúnpí. **41.** câ, ža, jì *day:* *čâ, čî. Also 36. Medial *č: **42.** lúcí?, loža?-, lùjí *tongue:* *llúčí?. **43.** ʒíci?, ʒiže?, šìji *milk, breasts:* *šíči?. Also 17, 22, 35.

Initial *tč: **44.** cúnná, šone, čòná, són [ts-] *three:* *tčónná; Chat. snâ. **45.** cî, ši, čî?, zî?i [dz-] *ten:* *tčî?, čî?i; Chat. tîh. **46.** cînu?, šino?o, čî?ñu *fifteen:* *tčî?nu, tčinu?u (evidently contains the word for *ten*); Chat. ?nyú. Medial *tč: **47.** ítca?, yiše?, gìča *hair:* *yítča?. **48.** ítcí, yiše, gì?čé *metate:* *yî?tčé. **49.** cîtci, šyiš, na-kîči? *white:* *kči?tči?.

Initial *s: **50.** dâ, za, zà *fat:* *sâ. **51.** dîna?, palm, zîña *palm tree:* *sîna?. **52.** dă, za, bi-zà?a, tà? *beans:* *să?a. Also 33. Medial *s: **53.** nêda, nez, nèza *road:* *nêsa. **54.** ʂùdi, ʂa?, bišòze *father:* *pšòse, šša?; Chat. stî. **55.** žîda, iz, ìza *year:* *kîsa, ìsa. Also 11.

Initial *ss: **56.** θiú?, syo? (in šía θiú?, yeγw syo? *downpour*): *ssiyú?. Medial *ss: **57.** índá, nis, nîsa, nit *water:* *nîssá, yînsá (< *yînssá < *yi-nîssá); Chat. ty?á. **58.** éθθa, yes *lightning:* *yéssa. Also 12, 13. (Note, in 54 and 57, that *s > Chat. t, just as in Cuixtla. Chat. s corresponds to Zapotec *š.)

Initial *š: **59.** ʐúa? (tone ?), ʐwa?, šùbá, ʐùbà *maize:* *šúpá?. **60.** ʐía?, ʐige?, šîga *jicara:* *šíka?. **61.** ʐîlá? (< *ʐilà?á), ʐiɪe?, šià?á *cotton:* *šillâ?á. **62.** —, ʐa?, šàba *clothing:* šàpa?. **63.** ʐí?ni, bi?čya?, šî?ni *son:* *ší?ni, pi?tčya?. **64.** ʐína?, ʐinə?-, ší?i, ʂín *nose:* *ší?na, ší?i; Chat. sȷhyéh. **65.** ʐinà, ʐna, šiñà *red:* *šinnà. Also 15, 43. Medial *š: **66.** lúzú, loʐ-, lùšu *beard:* *lŭšú. **67.** žîʐi, yiʐ, gìši *grass:* *kîši.

Initial *šš: **68.** ʂúnnú?, ʂon?, šònú *eight:* *ššónnú?. Also 20. No medial examples.

2. There are a few departures from the main developments treated so far. They include palatalization of original *k before front vowels and before *y, loss of medial stops between certain vowel sequences, nasalization of *p through the influence of another nasal in the same word. The conditions under which these modifications take place are for the most part definable. Where irregularities appear, they may be due to inadequacies in our formulations, to inter-dialect influences, to the existence of divergent original forms.

Before front vowels, original *k gives ž in Ixtlan, y in Yatzachi and Cuixtla, but

the development in Tehuantepec is the same (g) as in other positions: **69.** ží?, yi?, gì *fire*: *kí?; Chat. kí. **70.** žìna?, yin?, gi?ña *chile pepper*: *kì?na. **71.** žèlá, yel, gèla *field*: *kèlá. **72.** žêlá, yel, gèla (gida) *sandal*: *kêla. **73.** žêci, yeš, gìji *village*: *kêči, kêtči. **74.** žèla, še?eɪe, gè?la *night*: *kě?la, tče?ella (Note that the Yatzachi form is not a simple cognate of the other two). Also 34, 37, 67. The only Cuixtla example based on *k before front vowel is 23.

The correspondence š:y:g:k may represent original *kk before front vowels: **75.** šía, yeγ, giè, kíè *stone*: *kkéya; Chat. kè. **76.** šìa, yeγ, giè? *flower*: *kkě?ya. **77.** šǒ, yaw, gi?gu? *river*: *kkě?wu?; Chat. čùkù.

A single example so far seems to show Yatzachi čγ for medial *kky (see 28), but there is no change in the *kk in the other dialects.

Our material indicates that medial *p was retained between high vowels in sequences like ipi and *upi (14, 15, 16, 17) but was lost in the sequences *upa or *opa (27, 32, 59) in Ixtlan and Yatzachi. For *apa, there is only one example (62), also indicating loss of the medial consonant at least in Yatzachi.

Intervocalic *k is lost in Ixtlan when the words ends in glottal stop: **78.** lá?, lage?, ban-dàga *leaf*: *láka?. **79.** ṣù?, ẓoga?-, bi-šùgá *nail, claw:* *pšûká?. Also 60 (*šíka?). Two examples (25, 26) show retention of *k in *aka. The next example seems to show loss in Ixtlan: žà, yag, yàga *stick, tree.* However, Ix. has another form žaguágá for *firewood,* which suggests an original compound *žaga-uágá. The word žà may therefore be a distinct form and the real comparison: **80.** žag-, yag, yàga *stick, tree, wood:* *yàka; Chat. yàkè.

An original *p becomes m in the dialect of Cuixtla if there is a nasal anywhere in the word: **81.** bènné?, beNe?, bìnní, mèn *person*: *pênné?; Chat. nè?. **82.** becìna?, bži?n (yiṣe?), bijīña?, mzìn *deer*: *peči?na?; Chat. kwìnyá. Since we have no evidence that necessarily points to an *m in Proto-Zapotec, we have to assume a secondary development of mm from *np in cases like 40 (*čúnpí), even though mm or m is found in all the dialects.

The correspondence č:č:č:č is found in only one case, number 18. An original cluster is implied by the fact that all the dialects have a strong consonant as the reflex. It cannot be *tč because that would give c in Ixtlan, š in Yatzachi, s in Cuixtla. We suggest the reconstruction *tty on the basis of the form tyùp recorded by Angulo and Freeland for the dialect of Teotitlan, IJAL 8.113 (1934).

3. Word comparisons between the dialects seem to indicate that most original obstruent clusters were geminate. However, it is likely that many of them began as mixed clusters and were assimilated into geminates; that is, such a form as *čítta (36) could have come from an earlier *číkta. The process might even have taken place after the Proto-Zapotec period. It could have begun in one of the dialects and then spread to the others.

The inference that the prototype of the modern strong consonants were clusters is based on the evidence for mixed clusters. If there were no mixed groups, one might well deduce that the strong consonants were original. However, the theory is supported by those mixed clusters that occur—though the number contained in the present study is small—and also by the evidence of internal morphologic processes by which mixed clusters must have been formed in an earlier epoch.

We offer a few verb forms from Tehuantepec which give some idea of the morphologic combinations. The first form shows the infinitive, the second the future:

raká, gaká *to do*; riga?á, ka?á *to empty*; rigo?bá, ko?bá *to smoke*; ribié, kué *to feel*; riba?ná, koa?ná *to steal*; ridindé, tindé *to fight.*

The infinitive prefix is evidently r- before vowels (*to do*) and ri- before consonants.

The future prefix is g- or, in Proto-Zapotec terms, *k-. It combined with initial *k of the stem to give *kk, whose reflex in Te. is k, as in *to empty* and *to smoke*. An original *kt combination first became *tt and then Te. t, as in *to fight*. Original *kp, as in *to feel* and *to steal*, evidently developed first to *kw and finally to ko or ku according to the following vowel.

Several comparisons included in our study, and still others that have not been included, could not have come from geminate clusters and must be assumed to have always had mixed clusters. Thus, the correspondence ẓd: ṣs:š (92) evidently derives from an original *šs. In examples 79 and 54, Ix. ṣ must come from a cluster, whose nature is suggested by the corresponding biš- in Te.; perhaps we have original *pš, which developed an inserted vowel in Te. The correspondence č:šy:k (49) may be from *kč which became *tč, *čk, and *kk in early stages of the respective languages and then developed in the regular way for such clusters in each one; note the *k becomes y in Ya., as is regular in that dialect before front vowels. We have to assume original *np in 40, *ns in 57, *šn in 93, *tty in 18, *nl in 6, 7, 24, and 89. Thus, in sum, while early stages of Zapotec tended to favor geminates, these were never the exclusive type, and mixed clusters may well have been typical of Proto-Zapotec.

4. Proto-Zapotec evidently had two liquids (r, l), one nasal (n) and perhaps two semiconsonants (y, w). The modern languages all have an m but, aside from Spanish borrowings, it tends to be rare and would seem to have arisen by secondary processes: in the cluster *np, assumed in 40, and by nasalization of *p in response to an *n elsewhere in the word, as in 81 and 82. It is not absolutely clear that there were consonantic *y and *w in contrast to the corresponding vowels. Modern Yatzachi definitely has them, as is seen in a word like beγw *cloud* (10) with a non-syllabic w in a position where a vowel would form a separate syllable (actually this w seems to come from a vowel). Ixtlan and Tehuantepec show no such contrasts, and the non-syllabic sounds may be treated as positional variants of the vowel phonemes. It is impossible to decide as yet for one or the other analysis in Proto-Zapotec. We deal here tentatively in terms of *y and *w as independent phonemes because it is convenient, but do not hold this treatment to be proved.

The main developments from the original sonorant consonants, including a few typical clusters, is as follows:

*r > r, ǰ, r; *l > l, l, l; *ll > (l)l, ʟ, l; *nl > (l)l, ʟ, nd; *n > n, n, n; *nn > (n)n, ɴ, n; *y > ž, y, i; *w > u, w, u.

Departures from these correspondences, discussed in §5, affect mostly *y and *w, which may be lost or modified according to position. Also *l is lost in a sequence *ila and *n is palatalized in certain combinations in Tehuantepec.

Initial *r: **83.** ré?e, ǰe?e, rì?i *water jar:* *ré?i. **84.** rêni, ǰen, rìni *blood*: *rêni. **85.** rú?a, ǰwa?-, ruà? *mouth*: *rú?a; Chat. tùwǫ̀h. Medial *r: **86.** lâri?, laǰe?, làri *cloth*: *lâri?. Also 4.

Initial *l: **87.** lò, γlaw-, lù *eye*: *làwu, kelàwu; Chat. *ké-lǫ̀h. Also 35, 66, 78, 86. Medial *l: 5, 71, 72, 74.

Initial *ll: **88.** làža?, ʟey-, làya *tooth*: *llàya?. Also 42. Medial *ll in 61, but with simplification in Ixtlan connected with the position of the accent.

Initial *nl: **89.** lè?e, ʟi?-, ndà?ni *belly*: *nlì?a, nlà?ni. Medial *nl: 6, 7, 24. For an instance that may show *nl resulting from morphologic combination, see the Te. in 78.

Initial *n: **90.** ná?, na?-, nà?, yá? *hand*: *ná?, yá?; Chat. ya? (conceivably, the Cu. is a borrowing from Chatino). Also 26, 53, 59. Medial *n: 63, 64, 84.

Examples of *nn are only medial: 44, 81. See also 68 and the explanation offered in §5.

The simple development of *y, as shown in the summary of main developments, is found only in contact with back vowels.

Initial *y before back vowels: **91.** žû, yo, yù *earth*: *yû; Chat. lyu?. Also 80. Medial *y between back vowels: 21, 88.

The consonant *w was not common. Example 25 is the only one we have listed in which it appears apart from conditions that modify its development.

5. Divergent development of sonorants in one or another dialect took place in response to certain vowels preceding and following.

Original *l in the sequence *ila was lost in Tehuantepec: **92.** rọ̀dìla, ṣsil, ruši(-rìni) *breakfast*: *rawu-šsìla (Te. ruši- from *rùšia with final vowel lost in compound). Also 39, 61.

Original *n was palatalized in Te. when preceded by *i and followed by a back vowel: 46, 51, 64, 70, 82. A similar development takes place for the group *šn and also for initial *n before original *i: **93.** ṣná?, ẓna?-, ñà?á *mother*: *šná?á; Chat. š?ą. **94.** nì?á, ni?-, ñè?e, ní *foot*: *nì?á; Chat. yąh. But the medial sequence *ini does not give ñ, to judge from 63.

Single n instead of expected nn in the Ix. for 64 may be related to the fact that the accent follows the presumed original *nn. Single l is found instead of ll under comparable conditions in 61.

Weak l is found instead of strong L in the Yatz. for 24. This may be due to the consonant cluster. That is, perhaps *Lγ was changed to *lγ. Weak n for expected N in the Ya. of 68 may be due to a similar cause except that the cluster was subsequently simplified. That is *onnu? > *ONW? > *onw? > on?.

Before front vowels, *y was lost in Ix. and strengthened to g in Tehuantepec, giving the correspondence zero:y:g:y as seen in 38, 47, 48, 58 (the last without Te. cognate). Example 28 differs in having Te. ìke for expected *gìke, but this is probably a secondary dissimilation or a dialect borrowing.

After front vowels and before back ones, *y was lost in Ix. and Te., but preserved as γ in Yatzachi: 10, 75, 76. Where the phoneme came to be the second consonant of an initial cluster, it was kept as y; thus, syo? from *ssiyú? in 56, as against yeγ from *kkéya in 75.

An older initial *yl may be the basis for γl in Ya. γlaw- *eye* (87).

Ya. lγ for medial *ly or *lly is indicated by 8 and 24. The reflex of the *y in Ix. is i. In Te., it shows itself in a modification of the following vowel. Example 9 seems to show that the sequence *elya gives ella in Ix. If this is true then 8 cannot have original *elya and it has therefore, taking into account also the Ya. reflex elγw, been reconstructed *elyo. Compare 10, with Ix. ia corresponding to Ya. eγw, reconstructed *eyo.

Two examples, 17 and 77, show Te. gu for what must have been original *wu. Ix. loses the w and Ya. retains it, thus paralleling the development of *yi.

The sequences *awu and *awa and *ewu give o in Ixtlan, as seen in 87, 35, and 77. In Te., *awu gives u but awa gives o; *ewu is not contracted and ends up as igu.

6. The glottal stop in Zapotec is a consonant apart. It occurs only in syllable-final and in the position between vowels. It was very common in Proto-Zapotec, being found in almost half of the words reconstructed in this paper. It is noteworthy too that this is the only glottal phoneme; there is nowhere any suggestion of the present or former existence of an h.

All present-day dialects of Zapotec have a glottal stop. However, many original cases were lost in one or another dialect, and, under certain conditions, it was shifted from a medial to a final syllable. The rules governing these changes are so varied in the different dialects that there are few cognate sets in which the dialectal forms all have a glottal stop in the same position. In discussing the cases, we have to distinguish five characteristic positions: in a final accented syllable, intervocalic between the last two

vowels of a word, final in a word accented on the penult, in an accented penult, paired or occurring both after the accented penult and final.

In Tehuantepec, the first of two glottal stops in one word was lost before an original consonant cluster in bìku? *dog* from *pě?kkú? (2). The same thing seems to be true of simple *n in biǰíña? *deer* from *pecì?na? (82). Otherwise both were preserved: dù?bi? *feather* from *tù?pi? (16) and also 77. Word-final glottal stop after penultimate accent was lost in Tehuantepec: lâri?, laǰe?, làri *cloth* from *lâri? (86) and also 13, 32, 42, 43, 47, 51, 56, 59, 60, 62, 68, 78, 79, 81, 86, 88. In accented final, glottal stop was lost after original high tone: beré?, bǰe?, birí *ant* from *peré? (4) and also 1, 35, 68. This rule does not apply to such words as *hand* (90) and *mother* (93) whose normal usage is with possessive suffixes following the root. Neither does it apply after other tones than high, as gă, ga, gà? *nine* from *kă? (23) and also 45.

In Ixtlan and Yatzachi, a glottal shift took place by which a glottal stop in the penult was displaced to the end of the word. Thus, bèlá?, bele?, bé?la *meat* from *pè?lá (5) and also 16, 20, 21, 46, 70. Such words can be readily identified because this is a position in which Tehuantepec keeps the glottal stop in its original place. In words with two glottal stops, only one remained in Ixtlan and Yatzachi: tùbi?, dobe?, dù?bi? *feather* from *tù?pi? (16).

By another set of changes, glottal stop was lost in Ixtlan and Yatzachi after original rising or falling tone. This happened in original monosyllables and in bisyllabic words with intervocalic glottal stop preceded by rising tone: gă, ga, gà? *nine* from *kă? (23); tŭ, do, dò?a *rope* from *tŏ?a (31); and in like manner also 45, 52. Two glottal stops are lost after rising tone in šŏ, yaw, gì?gu? *river* from *kkě?wu? (77). Since in Ixtlan rising tone is limited to monosyllables and falling tone also has a number of special limitations, we can assume original inflected tones in certain forms which have lost glottal stops in Ixtlan and Yatzachi, even when they no longer contain inflected tones. Thus bèlla, beʟ, bè?nda *snake* from *pě?nlá (6); žèla, —, gè?la *night* from *kě?la (74); šla, yeγ, giè? *flower* from *kkě?ya (76); ítcí, yiše, gì?čí *metate* from *yí?tčé (48); cìtci, šyiš, na-kìči? *while* from *kčí?tči? (49); békkú?, beko?, bìku? *dog* from *pě?kkú? (2). The limited evidence we have so far suggests that two glottal stops could be lost if the tonal pattern was rising accent followed by low final syllable (49, 77). With other patterns only the ? in the accented syllable itself was lost, thus with rising-high in 2.

7. Proto-Zapotec evidently had five vowels, whose main development in accented syllables was as follows:

*i >i, i, i, i; *e > e, e, e, e; *a > a, a, a, a; *o > u, o, o, o; *u >u, o, u, o.

Note that original *o and *u are kept apart only in Tehuantepec. Yatzachi has a four-vowel system. Ixtlan, though it reduced the original five vowels to four, still has a five vowel system because new instances of o have developed out of certain contractions.

Examples of *i and *a are too numerous and too clear to require special illustration. But for the remaining vowels the evidence is either limited to begin with or is obscured by secondary developments. Original *e appearing as e in all the dialects is seen in 6, 7, 29, 38, 53, 71, 72. Original *o: 20, 31, 32, 44, 68. Original *u: 8, 16, 18, 27, 40, 42, 59, 66, 79, 91. Proof for the contrast of *o and *u has to be taken from Tehuantepec, for example, dòbá *maguey* (32) against šùbá *maize* (59).

Final *e?, accented and unaccented, changed to i in Tehuantepec: accented bì *wind* from *pé? (1) and zìdi *salt* from *sète? (33) and also 81. Original *e also developed to Te. i if the following syllable contained i, either primary or developed from *e?; thus rìni *blood* from rêni (84) and also 34, 73, 83, 4, 81. This also happened if there was a u

in the following syllable; thus bìzu *bee* from *pêsu (11) and also 2, 37. The same process occurred in Yatzachi under the very limited condition of a preceding y (from *k), as in yid *skin* from *keti (34) and yit *squash* from *kéttu (37).

Unaccented *e remained in Te. when it was not followed by a glottal stop, but changed to i in Ix. in exactly the same conditions. Thus ítcí, yiše, gi?čé *metate* from *yí?tčé (48) and also 22, 54. The sequence *e?i changed to e?e in Ix. ré?e *jar* (83).

The sequence *ay became ey in Yatzachi: geye? *five* from *kà?yú or *kà?yá (21), ʟey-*tooth* from *llày -(88). The sequence *ya, if unaccented, became e in Tehuantepec: gálliá, galɣe, gàndé *twenty* from *kánlyá (24) and also 9, 28, 75, 76. Unaccented *yo is assumed for the correspondence ia: ɣw: e in 8 and 10.

Ixtlan o developed from *awa (35), *awu (87) and ewu (77). In Te., the first of these gave o, the second u, while the third remained uncontracted in the form egu. In Yatzachi all three sequences appear as aw.

When an intervocalic consonant was lost or moved out of that position (as happened with ?), vowel sequences resulted in Ix. and Te. This process produced ia, iu, ua in Ixtlan, ie and ua in Tehuantepec. In Yatzachi, the result was y or w plus vowel. Note that either e or i in first position could produce i, Ya. y; either o or u could produce u, w. To illustrate: bìú?, byo?, bè?ó *moon* from *pè?ó (3), šìa, yeɣ, giè *stone* from *kkéya (75), túá?, dwa?, dòbá *maguey* from *tópá? (32). See also 10, 27, 59, 76, 85. When two like vowels came together, the result was a single vowel, as Ix. lá? *leaf* from *láka? (78) or Yatz. ʒa? *clothing* from *šàpa? (62). A simple vowel is found in Ix. ʂù? *claw* from *pšûká? (79) as against kuâ *dough* from *kkûpa (27). Perhaps the difference in tones and the presence of glottal stop account for the different treatment. In contractions resulting from the loss of glottal stop after an accented rising tone, it is the quality of the accented syllable that is reflected in the final product; thus tŭ, do, dò?a *rope* from *tŏ?a (31).

In Yatzachi, unaccented vowels tended to be lost or converted into semi-consonant y or w. This does not apply to unaccented vowels which received the accent on the formation of semiconsonant-vowel sequences, like byo? from *bè?ó. It applies to vowels before the accented syllable in bǰe? from *peré? (4) and also 12, 13, 64, 82. In the final syllable when the accent is penultimate, the retention or loss of the vowel is determined by phonetic conditions with respect to the presence or absence of glottal stop and the tone pattern of the word. Where the vowel is retained, it is normally in the form e [ʌ]. However, an original *u is retained in the form o in the word beko? dog from *pĕ?kkú (2).

The vowel is retained in Yatzachi when followed by glottal stop, whether one that originally followed it or one that came to be final as the result of shifting. Thus, dobe? *feather* from *tù?pi? (16), bele? *meat* from *pè?lá (5) and also 2, 13, 33, 43, 47, 61, 78, 81, 86. The vowel is lost despite the presence of ? after n in ʂon? *eight* from *ššónnú? (68), yin? *chile* from *kí?na (70), bži?n *deer* from *peci?na? (82). There is no loss after ɴ (strong nasal) in beɴe? *person* from *penní? (81). The case of ʂon? happens to be one in which strong ɴ might be expected on the basis of the Ixtlan correspondence; however, apart from this matter, the treatment is consistent with the other cases of weak n.

The final vowel was also retained in Yatzachi when it followed a glottal stop after an accented penult with simple high or low tone, as da?a *mat* from *tá?a (30) and ǰe?e *pitcher* from *rè?i (83). But a rising tone on the accented penult eliminated the final vowel along with the glottal stop in Ixtlan and Yatzachi both: tŭ, do, dò?a *rope* from *tŏ?a (31).

When there was no glottal stop, the final vowel was retained in Yatzachi in words whose original tone pattern was high-high (high-high in Ixtlan, low-high in Tehuan-

tepec). Thus, čope *two* from *ttyúppá (18) and also 22, 24, 40, 44, 48. The vowel is found to be preserved in one other example, wage *rat* from *wáka (25); unless this retention is due to some original feature of tone not clear at present, it has to be regarded as representing an inter-dialect influence rather than a regular development. In all other cases, the final vowel was lost, as in žit *bone* from *čitta (36) and also 6, 7, 17, 19, 20, 34, 36, 37, 38, 39, 48, 49, 53, 57, 58, 67, 71, 72, 73, 75, 80, 84, 91. However, a final o was converted into w and preserved in this form: beγw *cloud* from *péyo (10), belγw *star* from *pêlyó (8).

8. Zapotec accent falls on the last or second last syllable of the word. Tone is bound up with accent, affecting the accented syllable and the one following it, if there is one. Our material on tone is restricted to Ixtlan and Tehuantepec, and there has hardly been sufficient study even of these two. However, it is already possible to note some of the principal types of correspondence between the two dialects and to make some preliminary conjectures about the tone of Proto-Zapotec.

The accent has evidently stayed for the most part in its original location. Where the syllable structure of the word has been changed, this has sometimes entailed shifting of the position of the accent. Tehuantepec vowel sequences of the type ia, ua are monosyllabic with the second vowel as the main carrier of the accent and tone. Where these sequences result from old bi-syllables, it may involve a shift in the position of the accent; thus giè *stone* from *kkéya (75). A similar shift took place in Ixtlan evidently only when an old falling tone was involved, as in kuâ *dough* from *kkûpa (27). On longer words, the reduction of syllables was accompanied by a shifting of a penultimate accent so that the resultant form was still accented on the penult and with the same tone as the original; thus Ix. índá *water* from *yi-nsá from *yi-nïssá (57), Ix. làstó? *heart* from *lacitàwá? (35), Ix. ẓìlá? *cotton* from *ẓìlà?á from *šillâ?á (61). Such words are probably compounds, and they demonstrate incidentally that the accent and tone of the prior element are lost.

Modern Ixtlan has four different tones on accented final syllables: low, high, rising, falling. On accented penults, there are only three: low, high, falling. The syllable following an accented penult is either low or high, but the high never follows the falling. There are thus five patterns: low-low, high-low, falling-low, high-high, low-high. The inflected tones, rising and falling, are never found before a glottal stop. Tehuantepec has four tone patterns for final accent and perhaps only three for penult: low-low, low-high, and high-low. However, some of these patterns are infrequent. The only common types are low for monosyllables, low-low and low-high for penult accent.

On the basis of correspondences between Ixtlan and Tehuantepec, we may assume a system in Proto-Zapotec like that of modern Ixtlan except that the two-syllable patterns were complete with eight rather than only five possibilities. Also there were no restrictions with regard to following glottal stop. Indeed, the loss of glottal stop after rising tone gives us the means of reconstructing this tone in cases where there is no reflex of it in the modern tones themselves.

To judge from the available evidence, all four tones on monosyllables were reduced to low tone in Tehuantepec. For an Ixtlan-Tehuantepec correspondence of low:low, we reconstruct low tone in lò, lù *eye* except that the original form was bisyllabic, *làwu. For the correspondence high:low, we reconstruct high in bé?, bì *wind* from *pé? (1) and also 69, 90. For falling: low, we assume falling in tê, dè *ashes* from *tê (29) and also 41, 52, 91. For rising:low, we assume rising in gă, gà? *nine* from *kă? (23). Our evidence so far does not give us the means of determining the antecedents of the high, rising and falling tones that occur on some Tehuantepec monosyllables.

We have two cases of final accent in bisyllabic words. For one the cognates in both dialects have high tone and for the other both have low: beré?, birí *ant* from *peré? (4); ẓinà, šiñà *red* from *šinnà (66).

For penult accent, different tonal correspondences can be explained in terms of eight original patterns, provided one also takes into account the possibility of divergent development of the inflected tones conditioned by the presence of glottal stop. Each pattern is shown here by an example:

(a) tùbi?, dù?bi? *feather*: *tù?pi? (16). Also 33, 38, 46, 54, 55, 70, 82, 88.

(b) uága, uàga *rat*: *wáka (25). Also 30, 36, 37, 47, 60, 63, 75, 83.

(c) bêlla, bèle *flame*: *pêlya (9). Also 11, 15, 27, 28, 34, 39, 43, 51, 53, 67, 72, 73, 84, 86.

(d-1) žèla, gè?la *night*: *kě?la (74). Also 49, 76. This pattern can be distinguished from original low-low, as in (a), only when a glottal stop has been lost in Ixtlan by the influence of the tone.

(d-2) šǒ, gi?gu? *river*: *kkě?wu? (77). Also 31, 52.

(e) bèlá?, bè?la *meat*: *pè?lá (5). Also 6, 21, 35, 71.

(f) čúppá, čùpá *two*: *ttyúppá (18). Also 22, 24, 32, 40, 42, 44, 48.

(g-1) bêlla, bèndá *fish*: *pênlá (7). Also 8.

(g-2) ítcí, gi?čé *metate*: *yí?tčé (48). Shown to be different from (f) by the loss of ? in Ixtlan.

(g-3) bènné?, bìní *person* from *pênné? (81); bìú?, bè?ó *moon* from *pê?ó (3); ẓìlá? (earlier *ẓilà?á), šià?á *cotton* from *šillâ?á (61).

(h-1) túbí, tùbi *one* from *ttŭpí (14) and also 17, 19, 57, 66; békkú?, bìku? *dog* from *pě?kkú? (2).

(h-2) bèllá, bè?nda *snake*: *pě?nlá (6).

The subdivision of the fourth pattern (d-1 andd-2) is based on whether the Ixtlan form is bisyllabic or monosyllabic. Only in the latter case can the rising tone remain as such. The subdivision of the seventh pattern is based on the presence of glottal stop. If there is no glottal stop in the word, original falling-high gives falling-low in Ixtlan. If there is a preconsonantic glottal stop after the first syllable, the Ixtlan has high-high. If there is a glottal stop before or after the final vowel, the Ixtlan has low-high. In all three cases, Tehuantepec has low-high. Type h-2 can be distinguished from h-1 in that it contains a single glottal stop, as against the cases with none or with two.

The justification of these reconstructions is that they are consistent with each other and with the treatment of original glottal stop. In some cases, the deductions are based on altogether too few examples. We cannot therefore feel assured that the theory could be applied to all other comparisons which could be made between these dialects and with the tone patterns to be found in the remaining dialects. Nevertheless, one already sees a great amount of consistency running through the correspondences and it seems reasonable to suppose that the present theory is in some real part along the right track. What this and other problems of Proto-Zapotec need, is more phonemically controlled material on more dialects.

9. Though our study is still very preliminary, the points of affinity it shows among the four dialects may contain a clue as to the original relative location of the prototypes of these dialects.

If we consider the relationship *č > c:ž:J:s, we observe that Ixtlan and Cuixtla agree in having simple sibilant reflexes as against Yatzachi and Tehuantepec. At the same time Ixtlan and Tehuantepec agree in having affricates. These relations can be shown by rearranging the dialects in two dimensions, as follows:

Ix. c	Te. J
Cu. s	Ya. ž

A few other relations of similarity and difference are satisfied by the same arrangement:

	*s		*o:u	
d		z	u	o:u
t		z	o	o

Final vowels		*y	
+	+	ž	g
–	–	y	y

With regard to final vowels, it needs to be noted that some dialects of the valley-isthmus division lose them and therein stand with Yatzachi and Cuixtla. In other correspondences than those shown, it is typical for one dialect to stand apart from the other three. Thus, Te. has š as against ʒ in the other dialects for original *š. Cuixtla has θ for *tt as against t or tt in the other places. Ixtlan alone has a strong reflex for *t and *č. Yatzachi is the only one that has replaced original *r.

In general, then, there is no basis for pairing any two of the dialects into a group separate from the others. The only special affinities suggest a one-time geographic location in the general arrangement shown in the simple diagrams above. This arrangement is different from what we know in historical time. Perhaps we are justified in assuming that the linguistic ancestors of the present valley-isthmus division of Zapotecs, including Tehuantepec, once lived to the north of the Villa Alta mountains (Yatzachi) and to the northeast of the Juarez region (Ixtlan). The predecessors of the Miahuatec Zapotecs (Cuixtla) were in contact with the people of Juarez and Villa Alta. The present valley-isthmus people then moved into the valley thrusting the Miahuatec people apart from the others.

SIERRA ZAPOTEC FORMS OF ADDRESS

JANE GOODNER NELLIS
SUMMER INSTITUTE OF LINGUISTICS

1. Greetings
2. Titles used with greetings
3. Beseeching title -ʒ̈ícì?

1. Greetings. The greeting used by all men, women, and children throughout all the Sierra Zapotec[1] villages is paðiúʒ̈í[2], roughly equivalent to English *hello*. This form is used at any and all times of the day when seeing a person for the first time of that day. When two people part and later in that same day see each other again, the word čivècà?rí?u *now we have returned to see each other* (či *already*, ecàrí?u *so long*) is used.

Although this general greeting is known and used by all, each village has its characteristic greeting, so that throughout the region one is immediately known by the way he greets another. For example, the form used in the neighboring village of Analco is paðìúži with the change in tone; that used in Macuiltianguis is paðiúžioð.

In Atepec, from which the material in this article is taken, the men say paðiúžiž̨ð[3] and the women say paðiúžiž̨óó when greeting either one or several of their own sex or of the opposite sex. Children use the form used by the women.

[1] The Sierra Zapotec, numbering around 20,000, are located near the center of the State of Oaxaca, Mexico. This material was received from Hortensia Hernández, a young woman 23 years of age. She is a native of the village of Atepec and is also a school teacher; she has a good command of both Zapotec and Spanish. This study of the forms of addresses used in the village of Atepec has been made under the auspices of the Summer Institute of Linguistics.

[2] Sierra Zapotec has the following phonemes: consonants, p, t, k, kw, ?, c, č, f, v, θ, ð, s, ʂ, ž, ʒ̈, x, ɣ, m, n, l, ř, r, w; vowels, i, į, e, a, ą, o, u, ų; tone levels: high (´), mid (unmarked), and low (`). The stress falls on the penult of the noun stem.

[3] In rapid speech, paðiúžiž̨ð becomes paðiúžið.

2. Titles used with greetings.

2.1. General titles used with greetings. When greeting a woman or a girl without using the name of the person, paðiúži[4] naná[5] *hello ma'am* is used.

When greeting a man or a boy without the use of the name, paðiúži tatá[6] *hello sir* is used.

When greeting an older man or woman in a respectful manner, and the name is not known or used, paðiúži ?e?níùla *hello older person of respect* (?e?níùla is a contraction of ?enné?ɣùla *elderly person of respect*) is used.

Each of the three titles just mentioned can also be used as forms of address in conversation. When used in conversation, they have the same meaning as when used in greeting, described above. An example of naná is: ɣání ðuálu? naná *where do you live ma'am?* An example of tatá is: víání rùínlu? tatá *What are you doing sir?* An example of ?e?níùla is: ùtà?a kwíá?lu? le?e žú?u ?e?níùla *come into the house, old person of respect.*

When the name of the person is included in the greeting, the title has a different form. When women or children greet or call a woman in a respectful way, na[7] precedes the proper name, and the final vowel of the proper name is changed to lengthened oo (e.g. jovita > jovitoð): paðiúži na jovitoð *hello Miss Jovita.* When greeting or calling a man with respect, ta[8] precedes the proper name, and the final vowel of the proper name

[4] The -ʒ̈oo and -oo are dropped when proper names or titles are used.

[5] naná and tatá are also used when referring to the mother and father of another: e.g. víání lá naná kl? lu? *what is your mother's name?*

[6] See note 5.

[7] naá and taá with the lengthened vowel and change in tone are the words used when one is addressing his mother and father.

[8] See note 7.

is lengthened (e.g. ernesto > ernestoò); paðiúži ta ernestoò *hello Mr. Ernest.*

When a man greets or calls a woman in a respectful manner, na precedes the proper name and the final vowel of the proper name is changed to lengthened ee: paðiúži na èspèransée *hello, Miss Esperanza.* When calling a man with respect, ta precedes the proper name and the final o > u, and lengthened ee is added: paðiúži ta ernestuée *hello Mr. Ernest.* Between very close friends and relatives, the na and ta before the proper name is omitted.

In conversations other than greetings with paðiúži, na and ta are also used to show respect when talking or referring to another. In such contexts, the final vowel of a woman's or man's name remains unchanged: víáni ritè kwíá?lu?na jovita *How are you, Miss Jovita?* and víáni runibì ta ernesto *What is Mr. Ernest doing?* (referring to him).

2.2. Endearing titles used with greetings. The words nanátó? and tatátó? are affectionate ways of speaking to or greeting a woman or girl or a man or boy respectively. They are used chiefly by women when the name of the person is not used but when an affectionate manner of speaking is desired. Elderly men also use this form in speaking to children, and children use it when speaking lovingly to their parents. Example as greeting: paðiúži nanátó? or paðiúži tatátó? *hello little one.* Example as title: víáni rùínlu? tatátó? *what are you doing, sir?*

Men, women, and children use the endearing word riké[9] *very close friend* with their own sex or with the opposite sex when there is close, intimate friendship. It is used both in greeting and in conversation. Husband and wife use this term with each other to express affection. Example as greeting: paðiúži riké *hello close friend.* Example as title: nilá ùtà riké *come over here, close friend.*

3. Beseeching title -žíci?[10]. The forms nanážíci? and tatážíci?, referring respectively to the female and male sex, are used only in connection with begging for something, pleading for pardon, cases of extreme need. These expressions are used chiefly by women and children.

When prayers of supplication are said to the images of Christ or the Virgin Mary, tatážíci? and nanážíci? respectively are used; e.g. veniti?lo veženlaci?lu? kì?tu? tatážíci? *pardon us, excuse us, dear Father.*

When one swears that he is telling the truth, he uses this title; e.g. žuútè nanážíci?a laví južia? *really, the virgin Mary knows that I did not take it.*

When a woman has done some wrong and the president of the village pronounces a penalty of money or a term in jail and she in turn pleads for mercy, the term tatážíci? is used to refer to the president; e.g. víttu uθaka? valà le'ntèe? tatážíci? *please don't do anything to me, dear sir.*

Children pleading with their parents may use tatážíci? with their father or nanážici? with their mother for added force; e.g. vítturù wée?lu? ?intèe? nanážici? *please don't spank me, mother dear;* and go?ólu? tu vestíðú kià? ža tatážíci? *please buy me a dress, hear me, dear father.*

Adults, when asking a favor for some medicine or for some urgent request, may use this word to enforce it; e.g. ci vítturù medisína ki?étè gunè kià? nanážíci? *don't you have some medicine that you will give me dear ma'am?* Also when there is an argument between two adults and one begins to lose his temper, the other will try to calm him by using this word; e.g. víttu uca?anikià? kwíá?lu? nanážíci? *don't get mad, dear!*

[9] In the village of Analco, the general word of affection for close and intimate friends is vičí?. In Macuiltianguis, it is néekà. In Atepec, néekà is also an endearing word but is only used for those who are darker skinned.

[10] Cp. žilažíci? *whole sister* (having same parents), and žici? *mother's milk.*

DESCRIPTIVE GRAMMAR OF IOWAY-OTO

WILLIAM WHITMAN[1]

0. Introduction
1. Phoneme inventory
2. Phonetic and phonological description
3. Phoneme combinations
4. Phonological neutralizations
5. Phoneme changes
6. Syllabification
7. Primary and secondary accent
8. Signs of morpheme junction
9. Vowel sandhi
10. Consonant sandhi
11. Morphophonological changes
12. Expressive changes
13. The verbal complex
14. Positional prefixes
15.0. Pronominal prefixes
15.1. With active verbs
15.2. With passive verbs
15.3. Indefinite object wa-
15.4. Reflexive and reciprocal
16. Directional prefixes
17. Instrumental prefixes
18. General plural prefix a-
19. Order of preverbal elements
20. Form of verb stems
21. Stem reduplication
22. Causative suffix

0. Ioway is one of a group of three close dialects, Ioway, Oto, and Missouri, which form in reality one single language consistent in phonological and morphological structure with but slight lexical divergencies. In the last quarter of the last century J. Owen Dorsey of the Bureau of American Ethnology recognized the linguistic community of these three dialects and named that language the Chiwere or Tciwere, a word which we will transcribe in our present phonetic system as J̌íwele. This is properly the name for the Oto (the Ioway calling themselves Báxoǰe and the Missouri Núǐačí), but being numerically the largest of the three groups and reportedly having absorbed the Missouri branch entirely they perhaps have a good claim for giving their name to the whole language community. The material contained in the present study is partly Ioway and partly Oto, but an attempt has been made to specify each where there are known differences. The author spent three months in the summer of 1936 at the home of Robert Small, an Ioway Indian, and his wife Julia Small, an Oto, which was one of the homes in the Ioway settlement near Perkins, Oklahoma, comprising about 75 Indians. Linguistically this settlement was as much Oto as Ioway, there being no Indian there all of whose parents were Ioway. However, there were those who claimed to speak Ioway, of whom Mr. Small was one, and those who claimed to speak Oto, of whom Mrs. Small was one, plus a few from other linguistic groups. All the traditional tales collected by the author were given him by Mrs. Small, the last survivor of the Ioway Medecine Lodge (cf. William Whitman—The Oto, CUCA v. XXVIII, p. xvi, entry J.S.), who died in the winter of 1937. These are Oto in dialect. The author's grammatical notes, vocabulary lists, and colloquial texts were obtained from Mr. Small and are essentially Ioway in form. The differences between Ioway and Oto seem to be only in the pro-

[1] Deceased; the author's original manuscript, listed as Ms 5 in Index to the Franz Boas Collection of Materials for American Linguistics, Language Monograph 22 (1945), is now in the Library of the American Philosophical Society where it may be consulted. The last manuscript page includes a phrase, 'Added to the passive . . .', which suggests that a statement on the distribution of the suffix -hi had been made; we conclude that the manuscript available to us for publication is a fragment of a larger manuscript.

For a somewhat different treatment than that accorded to person markers in Section 15 of this paper, see C. F. Voegelin, A Problem in Morpheme Alternants and Their Distribution, Lg. 23. No. 3 (1947).

nunciation or form of a few words, and these will be noted where known.

The Jíwere language (comprising the Ioway, Oto, and Missouri) is of the Siouan linguistic family, and those acquainted with other Siouan tongues will recognize certain common features here. The present study is designed to be a purely descriptive grammar, and hence no comparative and very few historical observations will be included, though the material is so arranged as to bring out common Siouan linguistic characters.

The following signs and abbreviations current in linguistic literature will appear in this monograph:

+ indicates the addition or combination of phonetic or morphological elements.

= indicates the equivalence of two sets of elements where there has been no change in combining the one to give the other.

> means *develops into, becomes, gives*, and indicates a change or alteration in the direction of the point.

< means *from, comes from, develops out of*, and indicates an altered form analysed back into component elements or historical antecedents.

~ indicates two phonological variants of the same morphological element which alternate under given circumstances; sign usually means *alternating with*.

[ ] in the grammatical discussion or notes enclose a phonetic notation which is not phonematic; in the body of the texts enclose a word, words, or portion of a word, which is to be deleted as not being part of the original text, that is something which the observer noted down but which the informant probably didn't say, such as a repeated phrase or sentence.

< > in the body of the texts enclose a word, words, or a part of a word, which in the author's opinion is to be added as part of the original text, that is something that the informant probably gave but the observer failed to notice.

( ) in the translations of the texts enclose passages which have no correspondent in the text but were given to the author at the time of the analysing of the texts with one of his informants.

* before a word indicates a hypothetically reconstructed historical form or ancestor of a present-day word; after a word indicates a modern form not attested but constructed according to existing patterns.

1. Phoneme inventory:

	stop	spirant	nasal	semivowel	liquid
labial:	b p p̓		m	w	
dental:	d t t̓	ð θ θ̓	n		l
palatal:	j č č̓	– s s̓	ñ	y y̓	
guttural:	g k k̓	– x x̓	ŋ		
glottal:	ʔ	h			

Nasal vowels:

į, ų, ą

Oral vowels:

i, u, a, e, o

2. Phonetic and phonological description:

There are three stop phonemes in each but the glottal position; viz., a lenis which begins voiceless and ends voiced and is unaspirated, a media which is voiceless throughout and aspirated, and a fortis which is glottalized but with only moderate pressure. In the spirant classes outside the glottal the same tripartite phonematic correlation exists, but only the dental class is complete since the palatal and guttural each lack the lenis member.

The spirants are placed under a heading by themselves separate from the stops because Ioway possesses the common Siouan mechanism (but no longer productive) of using the spirants of the respective positions from the front of the mouth to the back to express increasing degrees of intensity in roots signifying breaking and the emitting of sounds and noises. The spirant series do not all correspond in point of articulation with the stop series opposite them in the above table. The dental stops are articulated with the tip of the tongue against the base of the upper teeth, but the dental spirants are inter-

dental though with less extrusion of the tongue than in the American English th-sounds and more like Castillian Spanish z and -d-. The palatal stops are a little farther forward than the English ch- sound in that the tip of the tongue touches the base of the upper teeth during the contact and hold of the stop. The palatal spirants are made with the tip of the tongue just behind the edge of the lower teeth and the blade of the tongue hunched up near the prepalate with the air escaping through a slight depression in the center of the blade and rubbing against the alveolar ridge. This type of sibilant occurs in Polish, written š, in some dialects of Dutch and Spanish, and elsewhere. Many of the younger Ioway speakers replace this prepalatal sibilant with alveolar s. By rights the y ought to be the lenis phoneme of the palatal spirant series. However, the existance of a fortis ẏ puts it in a separate category. This ẏ is found only in words where it exists beside variants with ś and ʔ, thús: luśáge ~ luẏáge ~ luʔáge *to fail, be unable, can't*, wąśá ~ wąẏá ~ wąʔá (įŋe) (*little*), *old man*. These are the only words in which ẏ has yet been recorded.

The glottal stop and the glottal spirant are both full-fledged consonants and can both occur in initial, medial and morpheme-final position as well as first members of consonant clusters (see **3**, below).

The nasals do not require much comment. The phoneme ŋ is limited to medial position after a nasal vowel. After į the ŋ is palatalized and in the diminutive ending -yįŋe this ŋ has passed over to the phoneme ñ in the speech of Mr. Small, my Ioway informant. In the speech of Mrs. Small, my Oto informant, the gutteral ŋ remained. In Mrs. Small's speech the ŋ after ų was very pronouncedly rounded. The ñ is the palatal ñ of Spanish.

The realization of the phonemes w and y is like those of English, viz., as continuants without any friction. In the realization of the ẏ the affect of the glottal closure is naturally heard before the continuant; during the period of that closure the tongue is in the position for making y.

The phoneme l constitutes the only liquid in Ioway. It is produced by a rapid contact and withdrawal of the extended tip of the tongue against the base of the upper teeth, during which contact the air escapes over the sides of the tongue. The contact is so short and the withdrawal so rapid that between vowels and after stops one is apt to get the impression of a single-tap r. In initial position it may be mistaken for the phoneme ð because of its dental articulation and almost stop quality, and after a spirant it could be mistaken for d. All these mistaken impressions have been received by the present and former observers. However, the proof that this phoneme is a lateral exists in the fact that it can be prolonged in slow pronunciation, when the lateral vibrations become clearly perceptible. The voicing of this sound starts before the actual articulation, which in consonant combination gives the impression of a slight break or a very short ə before the l. A transcription like b.l, g.l, etc., has been used for a similar condition in other Siouan dialects, but since this realization is automatic, universal, and nonphonematic in consonant combinations with -l in Ioway, it will not be further noted in this grammar or in our texts.

The vowel phonemes require no special description. Although in the vicinity of nasal consonants nasal vowels appear most frequently, yet oral vowels can be found near nasal consonants (mamáiñe *baby*, xláñį *to be hungry*), and at least one pair of words can be found which is distinguished by an oral vowel in one and a nasal vowel in the other word, viz., náwe *leaf* and nąwe *hand*. In words without nasal consonants many pairs can be found distinguished only in this fashion áje *to gather;* ąje *his father;* igú *to fetch;* igų́ *thus;* hí *to arrive going;* hį́ *fur, hair*, etc.). The phoneme ą is realized as a nasalized ʌ (as in English but, such): in accented position before ŋ (nąŋe *to be in a sitting position* and nąŋe *to run*); before consonant com-

bination (nągwa-nąje *fierce, terrible*); in the word *big, large, great* xą́ñe (Ioway form) and xą́je (Oto form), and always in unaccented position following the accent (nątúdą *to pity*, hįtúgą *my grandfather*, ʔúną *he did it and*, and so always -ną *and*).

3. Phoneme combinations. Consonant clusters in word-initial and word-medial:

Stop + stop. (čd): no word-initial example, áčda (*and*) *then*.

Stop + spirant. (ʔθ): ʔθúʔθu *mussel-shell*, ló?θi *armpit;* (ʔs): ʔsą́ke *nine*, uʔsúʔsų *wrist;* (ʔh): ʔhaʔha? *boo-hoo* (sound of crying).

Stop + semivowel. (dw): udwą́ *cat;* (gw): dó-gwèhi *turnip*, ugwé *to enter*.

Stop + liquid. (bl): blóge *all*, gléblą *ten;* (gl): glé *go back*, aglį́ *plus*.

Spirant + stop. (θg): θga *to be white*, bláθge *to be flat;* (sd): isdá *eye;* (sǰ): sǰédą *to be heavy*, mą́sǰe *hot weather;* (sg): sgáje *to play*, wósgą *habit;* (xd): iblíxdo *blackbird;* (hd): hdą *to be discolored*, ihdóge *elbow;* (hǰ): náhǰe *heart;* (hg): hgá *to be white*, bláhge *be flat* (newer pronunciation for θg, cf. above).

Spirant + nasal. (hm): sáhmą *seven;* (hn): láhnųwe *calumet;* (hñ): -hñe suffix of future.

Spirant + semivowel. (θw): ɬθwe *axe;* (sw): swą́la *to be soft*, baswá *to cut piece off;* xw: uxwáñį *to fall;* (hw): húhwa *well, well* (interjection).

Spirant + liquid. (θl): θléje *be long, tall*, waθlú *to spit, roast;* (sl): slą́slą *to be round*, sɬsla *opossum;* (xl): xlósge *to be empty*, xámoxla *flower*.

It is possible that when more Ioway material has been collected there will be examples of some of those consonant combinations not yet attested in initial position. The combinations ʔh and hw are attested only in interjections and onomatopoeic words. It is interesting that the Ioway ʔh and hw though probably extra-phonematic do fill out the phonological patterns of the language. The combination θg is in process of being replaced by hg. I encountered a few old Oto speakers who used the forms with θg, but the majority of Ioway and Oto speakers that I heard had only hg. Hamilton on the other hand records only θg (in 1848). The combination xd in iblíxdo *blackbird* is probably a mistake for hd.

There are very few sequences of vowel phonemes in Ioway. Before another morphological element beginning with a vowel, i and į are pronounced shorter than ordinarily and tend to approximate y, while u and ų tend to approximate w.

4. Phonological neutralizations. There are certain situations in the Ioway language when the oppositions that distinguish various phonemes are removed or neutralized. The most common is in compound words. The next most common is vowel harmony.

In compounding words the final -e of the first stem is commonly dropped and the consonant immediately preceding this -e undergoes certain changes.

In such circumstances all of the consonants of the guttural position (g, k, ƙ, x, ẋ, ŋ) are replaced by ʔ: ihdóʔ-pàhį *Sharp-Elbows* < ihdóge *elbow* + páhį *sharp;* hįnáʔ-sɬŋe *little old woman* < hįnáge (*old*) *woman* + sɬŋe *little;* úñįʔ-θù *wild beans* < úñɬŋe *bean* + θú *seed;* hįdúʔ-sɬŋe *mouse* < hįdúŋe *mouse, rat* + sɬŋe *little;* wayíʔ-sùǰe *chicken* (Oto form) < wayíŋe *bird* + súǰe *red;* míʔ-sɬŋe *duck* < míxe *water fowl* + sɬŋe *little;* míʔ-θèwe *black goose* < míxe *water fowl* + ðéwe *black;* wą́ʔ-wasòse *a brave* (Hamilton) < wą́ŋe *man* + wasóse *brave;* (there are no examples of this for k, ƙ, or ẋ).

There is one example of ǰ being replaced by ʔ in composition before a spirant, viz., wadúʔθage *loose corn* derived from wadúǰe *corn*.

In composition before a stop there is one example of x being replaced by h, viz., míhgùke ɬŋe *mud-hen* < míxe *water fowl* + gúŋe *to dive* + -ɬŋe diminutive ending.

There is one example of ŋ being replaced by ʔ before an added element beginning with a vowel, which is not usual: glą́ʔàsgų *he married her, it seems* = glą́ŋàsgų.

In the word tóh-glègleðe *woodpecker* (*spot-*

ted) the -h of the first element probably replaces some other consonant but the first element has not yet been identified with any other stem. A number of examples may be adduced of various consonant phonemes being replaced by h in composition before nasals: péhñį-hgàįŋe *alcohol* < péje *fire* + ñį *water* + hgá *white* + -įŋe diminutive suffix; ahánąhè *he was on it* < aháta *on top of* + nąhé *he was;* dagúhñįŋe *there was nothing* < dagú(le) *what, something* + ñíŋe *to be not, have not* (it is possible that this is an example of the phonomenon mentioned in the next paragraph). Other examples of h replacing various consonant phonemes are: kíhje *to fight, battle* derivative of kíðа *to fight, struggle;* ibúh-čè kè *he's dying of thirst* < ibúðe *to be thirsty* + čé *he is dying* + kè particle.

I have collected a number of examples of words in which an h appears when elements are added on without there being any explanation for the presence of this h. There are: egláhda *he sees his own* < a + gla + da (verb adá *to see*), hįwéglahda *we 2 see our own ones* < hi + wa + a + gla + da (and so regularly h appears in the verb adá after the prefix gla-); egláhdąwe *to watch, take care of* (lit: *to watch on one's own*) < a + gla + dąwe *to wake, watch.* The form dagúhñįŋe *there was nothing* probably belongs here, since one would expect it to be compounded of dagú + ñíŋe and not dagúle (see under Pronouns) + ñíŋe. If the etymology of tóhglè-gleðe *woodpecker* of tó *blue, color* + glégleðe *spotted, striped* given by my informant (Mr. Small) is to be credited, then the h in this word is another case in point.

One other case of neutralization of a consonantal phonematic opposition is to be seen in the form hįná?-sį? *little old woman* where the final ? replaces an original ŋ (cf. hįná?-sįŋe above).

The instances of neutralization of the opposition between vocalic phonemes are all of the type that might be termed vocalic harmony. The number of these is not very large. They are: bé-líhiàsgų *he threw it, it seems* < bé *to let go* + lé *to go* + -hi causative + -àsgų narrative, evidential; bé-líhi *he threw it,* hįbé-líhį *we 2 threw it* (but habéléha *I threw it*); wéwesdąkenawiną *they tempted us* < wáwe-; eléglasda *thou sees thy own* < a-lé-gla-sda; welégla?ą *thou carries thy own ones* < wa-lé-gla-?ą; weléką *thou tells stories* < wa-léką; wéweglawą ho' *you must call us 2 (your own)* < wáweglawą ho'.

5. Phoneme changes. In the speech of my Oto informant Mrs. Small a tendency to replace dental stops by palatals was quite pronounced. These can hardly be called phonological neutralizations because there were no particular or regular conditions which produced this replacement. In fact these phoneme replacements must be considered part of a process of linguistic change taking place predominantly in the Oto dialect and in the same general line in which Winnebago has already proceeded much farther. The following examples come from the texts: čįjóiŋe *boy* = čįdóiŋe; -jąla *very* = -dąla; héjále *then it is* = hédále; čáñį *soup* = táñį; hįčágwa *my grandson* = hįtágwa.

6. Syllabification. In Ioway practically every syllable falls into one of the three following types: V, CV, CCV (where V stands for any vowel and C for any consonant phoneme). The only syllables which do not fit this pattern are those ending in glottal stop (?) or h. As we saw above (**4**), the syllables which end in ? and h occur only in morpheme combination. We may therefore take syllables ending in ? and h as phonological signs of morpheme junction. There are a few other cases of syllables ending in ?, and these can also be taken as signs of morpheme junction. These cases are all word-final. In the first instance the last syllable of the last verb in an interrogative sentence ends in ? when the interrogative particle je' is omitted, that is, in place of this particle; aléhgá? *is it so?* for alé ihgá je'; etc. In the second instance the finality sentence-characterizing particle ?ä, used by women, is often reduced to ?, thus: čéhiàsgų? *he killed her, it seems*

(completion of thought) = čéhiàsgų ?ā' (woman telling story).

Out of this one makes a general rule that all syllables end in a vowel, and in certain cases a -? or -h is admitted at the point of a morpheme junction.

7. Primary and secondary accent. The Ioway language has a free primary accent on one of the first two syllables of a word. It is of the type of a rather light stress accompanied by slight lengthening of the accented vowel. It is capable of distinguishing otherwise identical words, e.g., añį *he has*, áñį *I have;* wañį *meat*, wáñį *he has them;* añásgų *he had it, it seems*, áñàsgų *they said it, it seems*. The primary accent is indicated by an acute accent mark (') over the vowel of the accented syllable. There is regularly a shift of accent from the first to the second syllable of a two syllable stem in word composition when there is amalgamation (see below) at the point of junction: mąkóblasge *sternum* < mą́ge (< *mąge) + ublásge; sį́túpaθe *hips* < sį́je (< *sįde) + upáθe.

Ioway has two types of secondary accent. The first is rhythmically determined by the position of the primary accent and falls on the third syllable after the one bearing the primary accent. Since this accent is not capable of characterizing words and is automatically determined, it is ignored in our transcription. The second type of secondary accent is free in position with relation to the primary accent. It can fall on any syllable following the one bearing the primary stress. It is indicated here by a grave accent mark (`) over the vowel of the accented syllable. It occurs in compound words, and its place represents either the position of the original primary accent of the second member of the compound or a new position to which it has been drawn by an amalgamation (cf. under **9** below) of two vowels at the point of junction. Examples of secondary accent on various syllables following the primary accent are: ną́-hùje *tree stump* < ną́ *tree* + húje *base;* čí-ahàdaįñe *little out-house* < čí *house* + aháda *outside* + -įñe diminutive suffix; agúįòkeñe *moccasin* < agúje *footwear* + ukéñe *common* (with amalgamation).

8. Signs of morpheme junction. The syllables ending in ? and h which are signs of a junction between two morphological elements have already been mentioned. There is also another phonological phenomenon in Ioway which serves to indicate a morpheme junction. This is a long vowel in unaccented position in the syllable immediately preceding the junction. Examples are: léxē-blàsge *kettle lid;* ną́pōįñe *little-finger* < ną́po *finger* + -įñe diminutive suffix; ítā-mįną *he there sits;* ną́gwā-naje *to be fierce, terrible*. This is a very common mechanism in the Ioway language and will be indicated where noted though the author does not believe that the long vowels in this position are phonematic but rather that this lengthening is a prosodic characteristic like the syllables ending in glottal consonants.

9. Vowel sandhi. In Ioway there are often various phonetic changes at a junction between two morphological elements involving the final vowel of the first element and the initial vowel of the second. This coming together of two vowels or vowel sandhi can be divided into three types, elision, amalgamation, and liaison.

When two words or two other morphological elements come together, the final vowel of the first element may be dropped before an initial vowel of second element. Examples of elision are: tadá *where* + alé *it is* > tądálé *where is it? where it is;* wa- *something* + igúðe *indicate by* > wíguðe *a measure, mile;* dagúle *what* + añį *to have* > dagúlañį *property;* wéñigle *wander* + unąne *to run in* > wéñiglunąne *to run hither and thither;* čí *a dwelling* + akílu?θą *bent over to meet* > čákilu?θą *wigwam;* čí *house* + ugwáwile' *come* (pl.) *in!* > čugwáwile' *come into the house!;* ñį lóhą *a lot of water* + úyu ke'

it fills it > ñį́ lóhúyu ke' *there's a lot of water in it.*

When two words or two other morphological elements come together, the final vowel of the first element may combine with the initial vowel of the second element to produce a single vowel of different quality from either of the original words. Examples of amalgamation are: wa- *something* + ugląǫe *put on the head* > wóglǫe *headdress;* ną *wood,* iwágluje *cut with by pushing with the hand* > néwagluje *a saw;* ną *wood* + ugwą *a pile* > nógwą *woodpile;* agúje *footwear* + ukéñe *common* > agújõkẽñe *moccasin;* hį- *we 2* + añį *have* > háñį *we 2 have;* hį *hair, fur* + uθlą *bunch* > hóθlą *bunch of hair;* hį- *we 2* + ixą *live* > hįxą *we 2 live;* másų *feather* + ugląǫe *put on the head* > másūglǫe *feather bonnet;* náhdo + iglǫe (?) > náhdwēglǫe *raspberry* (analysis uncertain).

When two words or two other morphological elements come together, the final vowel of the first is replaced by a consonant before an initial vowel of the second element, the replacing consonant being the one of all the consonant phonemes which has the most phonetic characteristics in common with the replaced vowel. This process is limited to u and ų which are replaced by w before another vowel. Examples of liaison are: dagú *what* + isá je' *do you say?* > dagwìsa je' *what did you say?;* éwa-ʔų́ *he is one who does it* + -àsgų evidential, narrative suffix > éwa-ʔwàsgų *he was the one who did it, it seems.*

10. Consonant sandhi. In word or morpheme junction certain consonants may undergo replacement or disappearance.

There may be loss of the final vowel of the first element before an initial consonant of the second element with resultant contact of two consonants. In such cases the two contiguous consonants are replaced by a single third consonant which possesses all the phonetic characteristics which the two replaced consonants have in common. Examples are: glaxáčiǫe *very largish* < gla- *very* + xáǰ(e) *large* (Oto form) + sǫe *small* (used as diminutive ending); lásǰlaje *he calls me by name* < láy(e) *name* + hiláje *he calls me;* inąki *to set down* < i- + náǫe *to be sitting* + -hi causative suffix; aháčǫahe *we 2 are on top of it* < ahát(a) *on top of* + hǫahe *we 2 are.*

There may be loss of the final vowel of the first element before an initial vowel of the second element with resultant contact between consonant and vowel. In such cases the consonant is replaced by the fortis phoneme of the same mouth position. Examples are: wayǰkihjè *bird's egg* < wayǰǫe *bird* + ihjé *egg;* ǰčilò *flesh of the cheeks* < ǰǰ(e) *face* + iló *body, flesh;* isda-mąθùglǫe *spectacles* < isdá *eye(s)* + mąð(é) *iron, piece of metal* + ugláǫe *to put on;* léxisgagle *bucket-pole* < lé*x*(e) *bucket* + isgágle *to bind to;* sóṫùyu *smoky* < sóǰ(e) (< *older* *šóde) + úyu *to fill.*

In certain cases a morpheme-initial h and a morpheme-initial g (before i) are dropped after a preceding vowel with subsequent elision or amalgamation of the first vowel with the vowel following the h- or g-. Examples are: čǫhi *we 2 kill* < čé-(h)į-hi; áṫąwe *I jump over* < a-(h)á-ṫąwe; ųlaką *thou gave it to me* < u-(h)ǰ-la-kų; héṫą *I fly* < ha-(g)ǰ-ṫą; hįṫąwi *we fly* < hį-(g)ǰ-ṫą-wi; wégluje *he cut them* < wa-(g)ǰ-gluje.

11. Morphophonological changes. Certain phonetic changes taking place before certain morphological elements are here called morphophonological changes. There are three groups.

Before the directional prefix gla-, indicating that the object of a verb reports back to the subject, all other prefixes ending in a change their a for e. Thus, egláñį *he has his own one* < a-gla-ñį (añį *to have*); weglábe *she leaves her own ones* < wa-gla-be (wa- *them*); wéweglawą ho' *call us 2 (who are thy own)!* < wáwa-gla-wą (wáwa- *us 2*); welégla?ą *thou carries thy own ones* < wa-

la-gla-ʔą (wa- *them*, la- *thou*); uhégwexą *I blow at mine* < u-há-g(la)-wexą (ha- *I*). This same change of a to e appears in the verb udwáñį *to fail to reach, come up to*, thus uhédwañį *I fail to reach*, uhédwañį *thou failest to reach*.

Certain verb stems terminating in -é and a few in -e replace their final e by a before the following suffixes and postverbal particles: -ñe indefinite plural, -wi definite plural, -na *it is* (used to set off nouns and verbs in sequence and hence translated *and*), lę̀ ~ lɛ̀ particle characterizing imperative sentences (men, women), ǰé particle characterizing interrogative sentences. The suffix -ñe, indefinite plural, appears as -na before -wi and ǰé and -či, causal subordination, and the suffix -hñe, future, appears as -hna before -či and ǰé. The particle ǰe is often omitted in sentences, but the -a of the final verb form indicates that the sentence is interrogative. Examples: é *he says*, áwi *they* (def.) *say*, áñe *they* (indef.) *say*, ánạ *he said;* ƙé *he digs*, ƙáwi *they* (def.) *dig*, ƙáñe *they* (indef.) *dig*, ƙána *he dug*, ƙá lę̀ *dig!*, ƙá ǰé *did he dig?;* čé *he dies*, ɬáwi *they* (def.) *die*, ɬáñe *they* (indef.) *die*, luče *he crosses*, lutáwi *they* (def.) *cross*, lutáñe *they* (indef.) *cross*; ɬáči *because he was dead* (čé *to die, be dead*); háŋawi *they* (def.) *are lying* (*there*) (háŋe *to be in a lying position*); náŋawi *they* (def.) *are sitting* (*there*) (náŋe *to be in a sitting position*); wówakųnawi *they* (indef.) *gave it to us* < wá-u-wa-ƙų-ñe + wi; čéwahinači *because they were killed* (lit. *because they killed them*) < čé-wa-hi-ñe + či; glíhnači *because he is about to arrive back* < glí-hñe + či; sléhna ǰé *will thou be going?* < slé-hñe + ǰé; umíną-nąháda *where she was sitting* < -nąhé + da; líhada *where they were* (líhe *they are*); wéglañada *when I took my own ones* < wa-a-(h)a-gla-ñį + da (añí *to have*, the only word noted that changes -į to -a).

In composition of verbal stems the -e of the first stem in certain verbs changes to -a. Examples: ugwá-giglásgų *he fell in, it seems* (ugwé *to enter*); yą́we-láhe ke‘ *he was going along singing* (lé *to go* + -he *to be*); lutá-láwàsgų *they* (def.) *went across, it seems* < lučé + lé + w(i)-àsgų; uwámáñį *he went by walking* (uwé *to go along in* + máñį *to walk*); tá-hàŋe *she was lying dead* (čé *to be dead* + háŋe *to be in lying position*); (once čé-háŋe *he was lying dead*); ihá-nąhe ke‘ *I was saying it* (ihé *I say* + nąhe *I am*); ɨtá-ǰiglé ke‘ *he was talking* (ičé *he talks* + ǰiglé *he becomes*); nąhásląsgalé *if he is alone then* (nąhé *he is* + -sląsgalé *if* + alé *it is*); ígī-dahàʔe *the one standing here* (dahé *to be in standing position* + -ʔe *it is that one*).

There are a few examples of a change of -e to -a in the same verbs as above without the addition of a following morphological element. Thus, ǰíweledénaha *those from the Oto* (ǰíwele *from the Oto* -da *at* + hínąhe *they* (def.) *are*); tądá ahą́ŋa *where they are lying* (ahą́ŋe *they* (indef.) *are in a lying position*). It will be noticed that both of these examples are nominal clauses, from which we suggest that the morphophonological change of -e (and the one example of -į) to -a was originally nominalizing in function in all the cases where it takes place. However one must remark that this process is no longer active since the majority of the verbs in the language which end in e do not undergo this change to -a, or else it must be considered that the -e of these verbs is not original but a recent addition. To support this one may note that all the verbs but two (háŋe and náŋe) which change -e (or -į) to -a end in -é (or -ɨ), many being monosyllabic, which would point to the primitiveness of their -e as over against the rest of the verbs in the language in -e which are accented on the root. The two cases lučéwàsgu *they* (def.) *crossed, it seems* and čé-háŋe *he was lying dead* show that this morphophonological change of -e to -a is tending toward elimination through the analogical influence of the numerous verbs which do not undergo this change.

12. Expressive changes. There are two types of phonetic changes which we will call expressive.

To make a word carry better in calling or singing its final a or ą is often replaced by -o. This is most common in terms of address. Examples: hį́ko *oh my father!* (< hį́ka); hįtúgo *oh my grandfather* (< hįtúgą); wąǰó *oh old man* (< wąǰá); laǰíno *you eat* (end of a line in a song) (< laǰíną); haǰíno *I eat* (end of song line) (haǰíną).

The accented vowel of a word is often overlengthened in dwelling on the word in various expressive or emphatic situations. This extra long vowel is marked with a following plus sign (+). Examples: mį́ + le *is it my turn?* (mį́le ke' *it's me, it's my turn*); dú + je *is it done?* (dúje *it is burnt, cooked, ripe*). Expressive particles are very often lengthened: hį + ñį́ ilógleñe ga' *Well . . . they must have found water!* (surprise) (woman speaking), he + hįtágwaįŋ̨ēhči *Ah . . .* (pleasure), *very nice little grandson* (man speaking).

The final o of our first type above is often lengthened, and so too in calling or singing is the particle le'–ie' which characterizes imperative sentences.

13. The verbal complex (verb stem plus affixes) is the most important part of the Ioway sentence because it contains the elements expressing the syntactic relations of the subject, object and indirect object, and can thus form a complete sentence in itself.

In addition to the verb stem or a compound of verb stems, the verbal complex contains preverbal and postverbal affixes. The preverbal affixes express various notions of location of the action with regard to a position not that of the subject or object; various instruments or means by which the action is performed; the pronominal elements of the subject, object and indirect object; the general plural of verbs of motion. The postverbal affixes include the causatives; modal elements.

All the verbs in Ioway fall into one of two types, active or passive. With the active verbs the subject performs the action. With the passive verbs the subject is acted upon or affected by a certain state. The pronominal prefixes are divided into agent (acting) and patient (affected) forms. By various processes passive verbs can be made active, but the reverse is not true. The great majority of the verb stems in the language are passive.

14. Positional prefixes. The three positional prefixes form the first class of elements making up the verbal complex. They locate the action of the verb with reference to a third point not that of the subject or object. They are: a- *on, upon, over*, u- *in, within, into*, i- *at, to, by* and any general locatival not covered by the concepts of the first two positionals.

Examples with active verbs are: yą́ *lie down*, ayą́ *bed* (*lie on*), uyą́ *lie in*, iyáyą *be lying down;* bé *throw, let go*, abé *throw on*, ubé *throw in;* ťą́we *jump*, aťą́we *jump over*, uťą́we *jump in*; gú *be coming back*, agú *fetch back*, igú (*go to*) *fetch;* ʔú *do, make, use*, iʔú *do to, make for, make with;* yą́we *sing*, uyą́we *sing about, song*, iyą́we *sing;* hą́je *dream*, ihą́je *dream about;* lumį́ *buy* (Hamilton), ilúmį *sell* (Hamilton); lúje *eat*, wáluje *table* (*eat on*), wóluje *feed*, ilúje *eat up;* gúðe *point out, show*, igúðe *measure;* yáwe *pierce, stick*, iyáwe *cactus* (yíyawe *fork*).

Examples with passive verbs are: bláhge *be flat*, abláhge *be level*, ubláhge *be flattened;* búðe *be dry*, ibúðe *be thirsty;* tą́ʔį *be visible, showing*, utą́ʔį *appear;* lóhą *be much, plenty*, ulóhą *a flock, herd;* ðí *be yellow*, uðí *be rusty;* xą́je *be big, large* (Oto), uxą́je *be very large* (Oto); xláñį *be hungry*, uxláñį *be very hungry*.

15.0 Pronominal prefixes appear in second position in the verbal complex although

certain forms take first position even preceding the positional prefixes.

Ioway by its pronominal forms distinguishes three persons: the speaker or first person (*me*), the addressed or second person (*thee*), the pair of speaker and addressed or inclusive person (*the pair of us*). Our so-called third person (*he, she, it, they*) is not expressed by any pronominal forms in Ioway. The simple verb form expresses the third person subject and object.

The plural is a function of the whole verbal complex expressed by suffixes and as such will be treated under the post-verbal elements. Our notion of *we* (*I and he, I and they, I and you all*) is shown in Ioway by the plural suffix -wi with the inclusive personal pronoun prefix, and *you* is shown by the suffix -wi and the pronominal prefix of the second person. Since the third person is not characterized by pronominal prefixes, the verb form plus one of the plural suffixes expresses our notion of *they* (for the notion *them* see **15.3** below). In translating Ioway into English the forms *thou* and *thee* will be used for the second persons singular, and *you* for the second person plural only.

For each of the three persons in Ioway there are two forms, an agent form (indicating the subject performing an action), and a patient form (indicating the subject being acted upon or affected by a certain condition). The agent forms are used as subjects of active verbs, while the patient forms are used as objects of active verbs and as subjects of passive verbs. The forms are as follows:

	AGENT	PATIENT
I, me	ha-	mį- ~ hį-
thou, me	la-	li-
we 2, us 2	hį-	wa-wa-

The patient form of the first person mį- is apparently more archaic than hį-. The following examples of its use have been noted: as a direct object with a third person indirect object, amſbe ke' *he left me on it;* as an indirect object with a third person direct object, mį?ųluyákiñe *they couldn't do it to me;* as the object of the causative with a third person subject, udámį *she spared me,* čémįhñe ga' *he will surely kill me,* ixą́mi *he saved my life,* lémį *he sends me* (but lſla < l[e]-[h]į la-[hi] *thou sends me*); in inúmį *with me;* as subject of several ancient passive verbs, mįną́he *I am* (+ adjective), mą́ne *I am in lying position* (< mį-[h]ą́ne], mſhgalé *that's what I'm like* (mſhge + alé); and for forming the independent pronoun forms of the first person.

The agent form hį- of the inclusive person always appears in first position in the verbal complex. It amalgamates with the positional prefix a- giving hą́-, with u- giving hó-, and with i- giving hį́-. The patient form wawa- of the inclusive person is written wa-wa- because in the verbal complex the two parts can be separated by the positional prefixes giving with a-, wáwa-; with u-, wówa-; with i-, wíwa-.

When the pronouns of two persons (one as subject and one as object) appear in the verbal complex the following table gives the combinations in which they occur:

	I	*thou*	*we(pl.)*
me		hįla-	
thee	li-		hįli—wi
us (pl.)		wáwala—wi	

15.1. Active verbs fall into two main types of conjugation: those with la- as the subject pronoun in the second person; those with s- in the second person (and usually without la-). The largest number of the active verbs falls into the first type, paradigms of which follow:

	yą́we sing	*glí arrive*	*glą́hi love*	*giá fly*	*nayį stand up*
I	hayą́we	haglí	heglą́hi	héta	hanáyį
thou	layą́we	laglí	leglą́hi	leta	lanáyį
we 2	hiyą́we	higlí	higlą́hi	híta	hináyį

The verbs which take s- in the second person all begin with d-, l-, or w-. In these verbs in the first person the initial consonants d-, l-, w- undergo changes according to the following table; examples follow.

Verbs in:	d-	le-, li-	la-, lu-	w-
I	ha-t-	ha-j-	ha-d-	ha-p-
thou	(la-)sd-	sl-	sl-	sw-

	adá *see*	lé *go*	lixú *drain*	láje *name*	lúðe *take*
I	áta (a-há-ta)	hajé	hajíxų	hadáje	hadúðe
thou	alásda	slé	slíxų	sláje	slúðe
we 2	hą́da (hį-áda)	hįlé	hįlíxų	hįláje	hįlúðe

	adá *see*	liθlúhų *drag*	láje *name*	lúðe *take*
I—thee	alíta (a-lí-ta)	lijiθluhų	lidáje	lidúðe
thou—me	ą́lasda (a-hį-lasda)	hįsliθluhų	hįsláje	hįslúðe
we—thee	hą́lidawi (hį-á-li-)	hįlíliθluhųwi	hįlílajewi	hįlílučewi
thou—us	wáwalasdawi (wá-a-wa-)	wáwasliθluhųwi	wáwaslajewi	wáwaslučewi

awáðuje *push down*

I—thee	alípaðuje (a-lí-paðuje)
thou—me	ą́swaðuje (a-hį-swaðuje)
we—thee	hą́liwaðujewi (hį-á-li-)
thou—us	wáwaswaðujewi (wá-a-wa-)

Most of the passive verbs take the patient form hį- as subject. However the verb lóðañį *be healthy*, signalized by my informants as archaic, takes the form mį- and takes it in medial position, lómįðañį *I am healthy*. This verb is to be analysed as a compound of ló *body* + ðañį *be whole, intact*.

There are a number of active verbs which follow special paradigms. The verbs nątúdą *to pity* takes the pronominal prefixes in the middle: nątúhedą *I pity him*, nątúledą *thou pities him*, nątúlidą *I pity thee* (probably = nątú-gi-dą < nąhje *heart* + u-gí-dą *be depressed toward*). It will be noticed in some of the paradigms given below that the second half of the verb is conjugated along with the first half:

The following verbs have special paradigms which are a mixture of active and passive:

	nąhé *be (sitting)*	hą́ge *be recumbent*
I	mįnąhe	mą́ge (mį-hą́ge)
thou	slą́se	swą́ge

	é *say*	aží *have*	líje *eat*	dahé *be standing*	gíla *want*
I	ihé	ą́ží (a-há-ží)	haji	hadáhe	hagúda
thou	isé	asli	laji	ladáse	lagúsla
we 2	hįhé	hą́ží (hį-ą́ží)	hįlíje	hįdáhe	hįgúla
they	áñe	añíñe	lučéñe	hidáhe	gčlañe

	hiwé *reach a lying position*	*hijé *reach a standing position*
I	hahíwe	*hahíje
thou	lahíswe	*lahísje
we 2	hįhíwe	*hįhíje
they	*hiáwañe (hiáwawañe)	*hiádañe (hiádadañe)

15.2 Regular paradigms of passive verbs are as follows:

		we 2	hínąhe	hįhąge
		we pl.	hanąhe	hahąge

	pí *be good*	hgá *be white*	íhgé *be like, thus*
I	hipí	hihgá	íhge (i-hį-hge)
thou	lipí	lihgá	ilihge (i-lí-hge)
we 2	wáwapi	wáwahga	wíwahge (wa-í-wa-hge)

they def.	[náŋawi] (from náŋe *be sitting*)	háŋawi
they indef.	hínąhe	ahą́ŋe
	-nąháñe (once)	

15.3. The prefix wa-, which is preceded in the verbal complex only by the agent pronoun hį- *we* (inclusive or plural), expresses the idea of indefinitely extended object and is translated in English by *them* or *something* according as our notions require.

With the positional prefix a- it amalgamates into wá-, with u- into wó-, and with i- into wí-. It is used to express our third person plural object or indirect object of a transitive verb: walóki *he fries, bakes them*, wáñį (wa-á-ñį) *she has them*, wíslogle (wa-í-) *thou found them*, wóhąñe (wa-ú-) *they boil them*, wagíwaxuñe *they sacrificed it (poured it out) to them*, wókitaną *she spoke to them and*, wígiče *he talks to them*, inúwalàsgų *he went with them, it seems*.

Often the prefix wa- is better translated *something*, or else it is used to make a transitive verb intransitive and is not translated: walúðàsgų *she took something, it seems*, wápagaxe *I write something, I get credit* (wa-á-pagaxe; awágaxe *to scratch on by hand*), wóhi *to win something, win (a race, game)*, walúje *to eat (food, meal, something)* (lúje *to eat it*), wólage *to tell a story, tell about something* (ulážge *to tell about it*), wéką *to discuss, swap yarns* (giką *to shake*), wawáðuje *to sew (things, something)* (waðúje *to sew it*), wáluxe *to marry, take a husband* (alúxe *to marry him*), wílesganą *having tied him with something* (ilésge *to bind it with*), hjwáligiloxiwi *we make a request of you, we ask something of you* (lóxi *to ask for it*).

These verb forms with wa- are widely used as nouns; in fact, the prefixing of wa- is the general method for forming nouns from verbs: wakį *a pack* (kį *to pack, carry on the back*), walúje *food* (lúje *to eat*), walúxawe (*sacred*) *bundle* (luxáwe *to peel, skin*), wílesge *a string* (ilésge *to bind with*), wíyawe *a fork* (iyáwe *to pierce with*), wóglaŋe *a headdress, hat* (uglą́ŋe *to put onto the head*), wóhąmį *a (female) cook* (wóhą *to cook, boil things* + mį *female*), wólage *news, story* (ulážge *to tell about*), wáluje *a table* (alúje *to eat on*), wáwagaxe *a writing, letter, book* (awágaxe *to scratch, write on*).

The indefinite object prefix wa- is used also with passive verbs, where it acts as subject and is best translated *something*. These forms are also used as nouns: wadúje *corn (in bulk)* (dúje *to be burnt, ripe*), wabúθge ~ wabúhge *wheat, flour, bread* (derivative of búče *be dry*), wasį *fat meat, pork* (sį *to be fatty*), mą́yą-waθlège *land-partitioning* (θlége *to be split*).

There are a number of passive verbs which commonly appear with wa-, in which the wa- has no apparent meaning in English: waláwelaki *a few*, wasóse *to be brave* (walísose *thou art brave*), waxóñįtą *to be holy*, waxwátą *to be poor*, wilósitą *to be shamed*, wočéxi *to be difficult*, (čéxi *to be adverse, bad, mean*), wóse *to be well supplied (with meat)*.

15.4. The reflexive is expressed by the prefixed element ki-: ákihda *I see myself* (a-há-ki-), alákihda *thou sees thyself*, ihákigloǰį *I struck myself (with my implement)*, hį́kigloǰį (hį́-í-ki-) *we 2 struck ourselves*, kilíluka *to strip oneself naked* (luká *be naked*), lakíče (la-kí-gi-če) *thou hurt thyself* (gičé *to hurt*), walúkihgiǰeñe *they are bound together* (lit. *they bind them together*), where the reflexive expresses the idea of a reciprocal *to each other*, kikú *he made himself into*.

There are many verbs which take the reflexive prefix without any particular reflexive notion in English. Such are: kínągle *to go hunting*, ukíče *to address oneself to, speak to*, kixíla *to think one is unable*, akída *to expect, wait for*, kída *to look after, care for*, ukínąxwe *to hide (oneself) from*.

Many of the verbs which take the reflexive prefix express the idea of *mutuality, together, meeting:* kigó *to hold a feast, assembly*, kíða *to fight, struggle*, kíhje *to fight,*

battle, akípa *to meet, encounter*, akílage *to contest, hold a contest*, akílu?θą *bend over to meet*, akíwenų *a horse-race*, kíluką *apart*, ikíglasgi *near each other*, kíwa?θe *to be between*, ékipa *to meet, connect*, ékilutaðe *matted together*, ékiða *to fight over*, ukílusamį *to scuffle, wrestle*.

When doubled or accompanied by reduplication of the verb stem the prefix ki- expresses the idea of reciprocity: ukíkiťawàsgų *they* (def.) *talked it over, it seems*, ukíkisą *to help each other*, akíkipa *to meet each other*, húkikilusamį *we 2 were scuffling*, ulákikilusamį *you were scuffling*, kiyáyaweñeną *they kept stabbing each other*.

16. There are three prefixes which, although they don't occupy the same relative position in the verbal complex, have sufficiently similar functions to warrant their being treated as a single class. These prefixes are here called directional prefixes since the action of the verb moves toward or refers to a certain point in the situation spoken about. In our grammatical terms these prefixes may be said to indicate an indirect object.

The prefix wa- indicates that the action moves away from a third point not that of the speaker nor the addressed: wahú *to start coming, come from*, tądá-waláhusge *wherever thou may come from*, tądáwanąhekalé *where can it be from*, ída wáduðe kè (wa-há-) *I got it from there* (hadúðe *I get it*), Mr. Morrison ída wáduðe kè *I got it from Mr. Morrison*, wáhgòyu ída wahú kè *it came from the cupboard*, June ída waǰílè kè *it began in June*, hélodada waǰílàną háhe ilógle *from morning till night* (lit. *in the morning it start from and night it come up to*), mágligų wahúną kúwa ilógle *from top to bottom, from the top down* (lit. *from above it start coming and down below it come to*), ahádagų-wahù (*coming*) *from outside*, čídā-wahù (*coming*) *from the house*, gaídā-walè (*going*) *from that point on*, máglida wáhu ke' (wa-há-hu) *I come from above*, walánąhàda *where he had started* (*going*) *from*, wáguñàsgų *they started* (*coming back*), *it seems* (wa-á-gu-ñe-àsgų), wáñįgli *he brought it back from* (wa-áñį-gli).

The prefix gi- indicates motion toward or reference to a third point and is used to express the idea of *to, for, concerning*: hįgíyąwe *he sang it for me*, hįlágiyąwe *thou sang it for me*, ligítohge *he lies to thee* (Hamilton has hįgítoθge *he lied against me*), wagíluseñe *they open it for them*, wígiče (wa-í-) *he talks to them*, hįwáligiloxiwi *we request something of you*, wáwalagislagwawida *when you nibble it off for us*, úlagislage (u-hí-la-gi-) *thou told it to me*. This prefix often indicates that the object of action belongs to some other person than the subject: hįgíluče *he took mine*, hagíduče *I took his*, áligita *I see thine*, or with passive verbs: θí hįgípi kè *my foot is better* (lit. *foot it is good to me*), nąwe ligíθewe kè *thy hand is black;* without gi-: hú hįñįče kè *my leg hurts* (lit. *leg I am sore*). There are a number of verbs that regularly take gi-: gipí *to like habitually* (lit. *to be good to, for*), gigúče *to show to, to teach* (*to*), gi?θú *to think about, remember*, gisdąke *to tempt*, ugísą *to help, give aid to*.

The prefix gla- indicates that the action reverts back toward the subject as a third point; it is used to express the notion that the object belongs to or refers to the subject: glá?ą *he carries his own one* (gi?ą *to carry*), alé xlóge gláke ke' *he digs himself a ditch* (lit. *he digs his own ditch*), ugláki čàsgų *he spoke to him* (*his own*), wóglaŋe églata *I see my hat* (áta *I see*), eléglasda *thou sees thy own one* (alásda *thou sees*), wéglawąną *he called to his own ones* (wa-gí-gla-wą-ną giwą *to call to*), egláhdąwewi *they* (def.) *watched over their own one* (adąwe *to watch over*), hóliglasątahñe kè *we will help you* (*our own ones*) (hį-ú-li-[gi]-gla-są-ta-hñe, ugísą *to help*). The prefix gla- amalgamates with the following l- to give gl- and with a following w- to give gw-: glúče *he takes his own one* (gla + lúče), wíheglogle *I found my own ones* (wa-ǰ-ha-g[la]-logle, ilógle *to come upon, find*), wégluhgiǰeñàsgų

they bound their own ones on, it seems (wa-á-g[la]-lu-), ɪgwahunasgu *she knew me* (*her own one*), *it seems* (i-hɪ-g[la]-wa-], wɪgwahuŋe *he knew his own ones* (iwáhuŋe *to know*), ulégwexą *thou blew thy own one* (u-lá-g[la]-wexą).

The directional prefix wa- precedes the pronominal prefixes (except hɪ-) and the positional prefixes within the verbal complex. The two prefixes gi- and gla- follow the pronominal prefixes.

17. There are nine prefixes which indicate the means or instrumentality by which the action is performed. These prefixes make passive verbs active. They are: wa- *by means of a motion with the hand away from the body, by pushing with the hand*, gi- *by means of a motion with a held object away from the body, by pushing or striking with an object*, lu- *by means of a motion with the hand toward the body, by pulling with the hand*, li- *by means of a motion with a held object toward the body, by pulling with an intermediary object*, nạ- *with foot, feet*, la- *with mouth, teeth*, bo- *with a blow*, ba- *by cutting*, da- *because of heating or freezing*. All the verbs formed with da- are intransitive and must be made transitive by the addition of the causative suffix, but the verbs made with the other instrumental prefixes are all transitive. Examples follow:

-gluje *cut in two a long horizontal object*, waglúje *to saw*, gighúje *to chop a lying object*, lighúje *to cut in two by pulling a hook on a cord*, liglúgluje *to cut in strips by drawing a knife along*, baglúgluje *to cut to pieces*.

-doye *break a long object*, wadóye *to break by pushing*, gidóye *to break in two by hitting with something*, lidóye *to break* (*a stick held in the hand*), nądóye *to break by foot*, ladóye *to break with the mouth*, bódoye *to break with a shot*.

-blaðe *rent, torn, burst* (*membrane, cloth, etc.*), lubláðe *to tear by hand*, dáblaðe *it burst from heat*.

bláhge *be flat*, nąblahge *to trample flat*.

-bliye *curl, bend limply*, lublíye *to curl* (*something*), lublíska *curled, curly*, giblíbliye *to wag* (*tail*), dábliye *to wilt*.

θéwe *be black*, bóθewe *to blow out a lamp* (*make black with a blast*), dáθewe *to become black in the fire*.

séną *disappear, be used up*, bósenạ *to blow* (*ashes*) *away*, dásenąhi *to burn up* (*things*) (*make disappear by fire*).

-θluhų *slide a long object along lengthwise*, giθlúhų *to slide along on its side*, liθlúhų *to pull along with a rope* (*lead horse, tow boat*).

-bluxe *make a crunching noise*, nąblúxe *to crunch* (*snow*) *with the feet*, lablúxe *to crunch* (*bones*) *with the mouth*.

dákala *to congeal, freeze*, dákalahi *to make freeze, freeze* (*things*).

-ɟige *stroke, wipe* (*clean*), *streichen*, giɟíge *to sweep*, lúɟíge *to rake*.

bé *let go, throw* (*away*), *abandon*, ulúbe *to scatter, strew in*.

sla *be bare, smooth, bald*, luslá *to pick* (*flowers*), baslá *to mow* (*grass*).

-sdą *stop, cease, leave off*, lusdá *to finish, stop* (*doing*), nąsdą *to halt, come to a stop*, lasdá *to finish speaking*.

18. With all verbs of motion (*go, come*) and a few others appears a prefix a- which indicates general plural; it is used regularly with the third person plural and in certain cases with the other persons in the plural: aɟíñe *they have come* (ɟí), agúñe *they are coming back* (gú), aglíñąsgų *they have come back, it seems* (glí), aláñe *they are going* (lé), hó-giθlge-ahíñe ke' *they have gone fishing* (hí), ahúñehñe *they will be coming* (hú), egláñahìñe *they have taken their own one* (a-glá-ñ[ị]-a-hi-ñe, añɟhì *to take, reach having*), añɟgiàglañe *they went by with him* (añí *to have* + giglé *to have gone by*), ahí-nąhésge *they got there and lo!*, adáhàsgų *they* (def.) *were standing*, hiádadañe *they stand up, rise up here and there* (hiɟé ~ hidá *to reach a standing position*), gliànąhà?e *those who have come back home*, aglínąhà?e *those who have come back home* (glí *to arrive back* (*coming*) + nąhé *to be*), úda alénąhà?e

those who went away (lé *go*), ígi-aslą̀ŋe *you who are here* (nąŋe *to be sitting*), lamąñaslą̀se *you are traveling about* (mąñį *to walk* + nąhé *to be*), uláyąwi-aswą̀ŋada *where you are lying* (uyą *to lie down in* + hąŋe *to be recumbent*), aslą̀sewi *you were*, yą-hiawañe *they lay down* (yą *to lie down* + hiwé *to reach recumbency*), tądá ahą̀ŋa *where they were lying*.

19. The above paragraphs describe all of the elements which precede the verb stem in the verbal complex. The following table gives the order of these elements. When they occur, the elements succeed each other in the order listed, 1 to 9.

(1) wa- *us*, hį *we 2*; (2) wa *indef. obj.*, wa *dir. prf.*; (3) a *on*, u *in*, i *at*; (4) -wa *dual*, li *thee*, hį ~ mį *me*; (5) ha *I*, la *thou*; (6) ki(ki) *reflexive*; (7) gla *dir. prefix*; (8) gi *dir. prefix*; (9) instrumental prefix.

20. Form of verb stems. The verb stems are mono-, di- and poly-syllabic. There is no formal feature which distinguishes the stems of active from those of passive verbs. A few examples follow.

Active monosyllabic: ʔú *do, make, use*, ké *dig*, bé *let go, throw*, é say, yą *lie down*, wą *call (out)*, tú *have, possess*, glé *put, place*.

Active disyllabic: gúðe *indicate, show*, kíʔį *try, gamble*, lóki *fry, bake*, mąñį *walk*, dótą *go on warpath*, háðe *flee, run away*, ɬą́we *jump (down)*, gláhi *love, like*.

Active polysyllabic: mą́lage *threaten (? plan)*, mánuñį *get lost*, máluče *travel*, nąɬúdą *take pity on*, hąʔégi *hurry*.

Passive monosyllabic: hgá *be white*, čé *be dead*, pí *be good*, ñį *be, exist*, ðí *be yellow*.

Passive disyllabic: θléje *be long, tall*, mą́ʔsi *be high, above*, šáge *be aged, old*, sísa *be divided up*, ñíŋe *be not, have not*.

Passive polysyllabic: ʔságala *be cracked*, dótuhų *be leader, the best*, xą́ñiŋe *be tired, weary*, wasóse *be brave*, lóðañį *be healthy*.

Many of the polysyllabic stems may be suspected of being compounds. This is indicated in the cases where the pronominal prefixes appear in medial position: nąɬúligladą *I took pity on thee (my own one)*, walísose *thou is brave*, lómįðañį *I am healthy*.

In addition to this a possible analysis can be given for a number of these polysyllabics: nąɬúdą *to pity* < nąhje *heart* + ⁺udą *turn toward*, máluče *to travel* < má *earth* + ⁺alúče *to cross on, over* (lučé *to cross*), xą́ñiŋe *to be tired* < ⁺xą *be lively, have vitality* (ixá *to live, be alive*) ñíŋe *to be without, have not*, lóðañį *be healthy* < ⁺ló *body* (iló *body, self*, cf. Winnebago ró *body*) + ⁺ðañį *to be whole, intact* (cf. Dakota ɬązáni *to be healthy* < ɬá *body* + zaní *to be whole, well*).

21. Stem reduplication is a very common process. It expresses distribution notion. When a disyllabic stem is reduplicated, there are only two recorded examples with the accent on the second syllable: tutúxe *brittle*, ƥoƥóye *be soft (like grass)*; all the other cases have the accent on the first syllable. The following are the recorded examples: hgá *be white*, hgáhga *be white in spots*; -slą *only, alone*, slą́slą *be round, circular, globular;* xíxi *be wrinkled;* xúxų *be pimply, pocked;* búðe *be dry*, búbuðe *be dry here and there;* θéwe *be black*, θéθewe *be black in spots;* súje *be red*, súsuje *be red here and there;* xóje *a hole*, xóxoje *be holey;* šóšoge *be lumpy, bumpy;* ƥą́ƥąje *be spongy, rubbery;* ƥóƥoye *be soft (like sand, carpet)*; slúsluje *be smooth, slippery;* pópoge *be strewn about;* ƥíƥixe *be soft (like thick carpet)*.

A number of other examples of verbs with prefixes and reduplicated stems have been noted: baswáswañàsgų *they cut him to pieces, it seems*, waʔsą́ʔsą *zigzag*, walúblabla *paper* (lit. *something separated into sheets*), luháhaye *up and down*, dásdįsdį *to sparkle*, waláxuxuge *he cracked them (bones) with his teeth*, wadódoxàsgų *he punched her full of holes*, kilála *various, diverse*, ikílala *of different kinds, varied*, kiyáyaweñe *they stab each other*.

Some compound verbs reduplicate only the second stem, as: hidáda beside ǰidáda *to stand up here and there*, hilála, ǰilála *to depart now and then*, hiwáwa *to lie down here and there*, hinąnąge *be sitting here and there*, iláwedądą *to go round and round in circles*, ídąlala *in rows*, géhǰilala *to stagger, careen*, hikúku *go back and forth*, blíǰlala *be weak*.

22. The causative is formed with the suffixed element -hi. It expresses the triple notion of causal (*to cause to be*) factitive (*to make do*), concessive (*to let do*).

TWO SONGS AND A LEGEND IN BORUCA

DORIS STONE

SAN JOSE, COSTA RICA

A free translation of the first song which is a lullaby (Cradle Song) follows:

I have a pretty little girl,
I like her to play with me very much,
She does not cry,
Nor does she sleep;
she is good,
Also she is happy (smiles)
Her eyes well open,
She plays.

Kun teba [*Cradle song (prayer)*]
atki bagra eksek wa- sit (ž) iamura [*I have a (one) girl-little pretty*]
atki kuín bejanra adki man ku -i -žera [*I much like (love) me with plays-she*]
Diban bo -in -ša [*Not (no) cries she*]
Diban kaba (ž) -i -š [*Not sleep she*]
Ikian moren - ra [*She good (well; best)*]
I iš šid - ra kaiš šené moren ku - i - žera [*Also laughs eyes open well plays she*].

The next song concerns the village of Boruca, the free translation of which appears below:

Boruca my village
Has the best flower of my heart
Which has an odor rich like the taste of shrimp.
We fill ourselves with it,
Happy and singing,
I am contented.

Boruca ad kag [*Boruca my village*]
Bagra moren kran- srut ta kuísik [*Has best tree flower (blossom) of-heart*]
Ki bagra iasuga [*has smell*]
Brežs(t) [*taste*]
seua [*shrimp*]
kutka - radin [*fill ourselves*]
šidra [*laugh*]
tebaiengra [*singing (praying)*]
ad kuísik moren [*my heart good*].

The following is a legend concerned with the pre-Conquest voyages of the Borucas to Cocos Island in the Pacific Ocean, approximately six hundred miles from present-day Boruca and the Costa Rican mainland. Whether Cocos Island or some other spot was the original location mentioned in the legend, cannot be verified at the moment. It is interesting, however, to notice the tale states that the voyage took four days, which is more or less the time one would take with primitive sailing gear. The fact that balsas or rafts are mentioned, and not bongos or canoes, is easily comprehensible under the terminology *legend*. Two gold figures have been recovered from pre-Colombian graves in the Boruca area, in fact, from the flood plain of the Diquis or Térraba River, which probably represent the Brožera or *colored-bone sea creatures*, about whom the legend is concerned. Freely translated, the myth reads as follows:

THE LEGEND OF THE BROŽERA

Our ancestors went far away, laden with the feathers of macaws, parrots, and egrets. They went to Cocos Island on rafts (balsas), and spent four days on the voyage. When they arrived, they scattered the feathers on the beach, and small creatures called Brožera, like people but not people, and with colored bones, came out of the center of the sea. They came out to gather the feathers, and when they appeared, our ancestors fell upon them and killed them. Then they gathered their bones and made necklaces out of them.

Kaguit kuíui Brožera [*Conversation (lasts a long while; lives) much (plenty) colored*]

at sasu- ro(j) de(g) kra sutkra kauit [*my old people (Ancestors; grandparents; ancient ones) went (left) fled far (distant)*]

De(g)kra šo kaís ištši kruit Isla Sea(g) - wá oska de(g)kra [*Went macaw egret feather (hair) parrot Sp. Island Coco nut (fruit) rafts (literally a balsa) went*]

Bakan kagwa kauit - kra [*Four days far went*]

Abeín debakra [*Then arrived*]

Abeín duka ro(j) - ki - biunkra ub -tšen - ka Brožera Abi -si(t) -ro(j) kj -du - (t)sta raztkra dukaro(j) krina [*Then feather they (other people; them) threw out sand plain place of (i.e. beach) Brožera person little salt water center of (i.e. from the center of the sea) came out feathers (to) gather*]

Abeín at sasuro(j) aižkra Brožera [*Then my (the) ancestors (ancients) killed Brožera*

Abeín detkra krina [*Then bone (or bones used collectively) gathered*]

Abeín detkra ki sodikra šožira(t) [*Then bone made necklace*].

A TEXT INVOLVING INADEQUATE SPANISH OF MIXTECO INDIANS

KENNETH L. PIKE

SUMMER INSTITUTE OF LINGUISTICS

In Tone Puns in Mixteco[1] I presented a text in which a foreigner had difficulty speaking Mixteco. He allowed his Spanish intonation to affect his Mixteco, and in so doing mutilated the tones of the language. In response to this situation, the Indians reacted with puns or near puns in which the plays on words involved the deliberate substitution of unexpected tonemes for the correct ones.

In Mock Spanish of a Mixteco Indian[2] I showed how Mixteco tone and Spanish intonation were again mixed. This time, however, a Mixteco Indian was deliberately using incorrect tones in an attempt to mimic Spanish intonation and to persuade his monolingual neighbors that he had learned Spanish in addition to his own speech.

The present text[3] portrays a different aspect of problems arising in a community where speakers are passing from monolingualism to bilingualism. Here, two Mixteco speakers know only a very few phrases of Spanish[4] and even these phrases they tend to use incorrectly. Some soldiers, searching for criminals, interrogate them. In replying, the Mixtecos use these phrases which are the only ones they know even though they understand neither the questions of the soldiers nor their own replies. By chance their phrases constitute a confession of murder, and as a result they are thrown into jail.

The soldiers find the Mixtecos looking at a corpse which they—the Mixtecos—had discovered accidentally. The soldiers say, in Spanish,[5] 'who killed this man?' One of the Mixtecos replied, *nosotros, señor* 'we, sir.'[6]

Next the soldiers inquire, 'why did you kill him?'[7] The Mixtecos answer, *porque simos*.[8] I asked Narciso, 'Why did they say that? Did they mean *porque sí* "just because"?' Narciso replied with a shrug, 'I don't know; that is all they said.'

The soldiers evidently considered the answer to be a typical reaction of Indians,

---

[1] IJAL 11.129–39 (1945). See, also, Another Mixteco Tone Pun, in IJAL 12.22–4 (1946).

[2] IJAL 11.219–24 (1945).

[3] Gathered under the auspices of the Summer Institute of Linguistics, of Glendale, California. The text was written by Narciso Merecías and revised by his cousin Angel Merecías. In a few items in which their dialects differ, that of Angel is retained.

[4] One might think that the picture given in this text is exaggerated, yet similar misunderstandings arise constantly in Indian villages where some Spanish is in constant use by a large minority—or possibly majority—of bilinguals.

Recently, for example, in the Aztec village of Tetelcingo, about sixty miles south of Mexico City on the Pan American Highway, I have observed the following two incidents: the wife of J. C., a man who uses Spanish readily in his commercial contacts, was trying to explain to a Spanish-speaking listener certain details about a piece of sewing. She described the problem in Aztec, which her listener could not understand. Then the listener tried to inquire about it in Spanish, with no satisfactory result. Mrs. C. could not understand the separately spoken words 'tomorrow', 'yesterday', and 'today' well enough to nod which was pertinent to the situation.

Another day I heard it suggested to her that she might like a Spanish-style dress, rather than her distinctive Indian costume, for wearing on a visit to Mexico City. "Oh no," she replied, "then people would think I knew Spanish and would speak to me and I would become embarassed because I could not reply to them."

I have heard a number of women in this village make errors in trying to use Spanish expressions for "Good morning" and "Good afternoon"; they either used them for the wrong time of day or made errors in agreement of adjective and noun.

[5] As reported by Narciso, of course. See phrase 208 in the text.

[6] Phrase 212.

[7] Phrase 215.

[8] Phrase 217.

many of whom refuse to attempt any explanation of their actions to "outsiders." In fact, I have frequently heard similar replies myself.

The soldiers then say sternly, 'Now you must go to jail!'[9] to which the Mixtecos reply with their third phrase, *razón será* 'that would be reasonable enough.'[10] So they are carried away to prison.

The elder brother of these two Mixtecos had spent the life savings of the three of them (forty pesos, about eight dollars) to purchase advice. The two younger brothers disregarded the advice and by so doing met the soldiers as reported above. When the elder brother hears that they have been imprisoned he comes to release them since, by following the good advice, he has gained riches and favor from the king.

A text of this type is of interest since it links culture and linguistics through the social results of an inadequate bilingual status of the characters therein described.

k^{w}e^{n}dú čàa nì-ta$^{?}$àn $^{?}$á-ná$^{?}$án

1. nì-ta$^{?}$àn-de tù-^{n}dó$^{?}$o kəbə̀ ní-hika-de ^{n}da$^{?}$ù, 2. nì-^{n}dúkú-de ña-sɔ́$^{?}$ɔ́-de. 3. te-nì-ki$^{?}$in núu-de $^{?}$uù ʂiko pesú nì-tà-^{n}da$^{?}$a-dé. 4. te-nì-na-hìnu nù k^{w}iá hà-ní-ki$^{?}$in núu-de. 5. te-tú-ná-ni$^{?}$ìn-dé ʂù$^{?}$ún há-nó$^{?}$ò nuù ní-ki$^{?}$in núu-de. 6. žúan-na te-nì-ki$^{?}$in-de ña-sɔ́$^{?}$ɔ́-de nì-ʂ^{n}dóo-de-ña. 7. te-nì-^{n}dà-tù$^{?}$ún-de híín $^{?}$úù ñanì-de čà-súčí, 8. te-nì-kè-kožo-de k^{w}à-sá-tiñu-de nù-$^{?}$ió $^{?}$asye^{n}dá čà-kúká. 9. te-žúan nì-kà-$^{?}$ìn-de n-ìkà-sá-tiñu-de $^{?}$uù ʂiko k^{w}ià. 10. te-nù-ní-hìnu kəbə̀ ^{n}dí-kožo-de híín ñanì-de, 11. te-nì-ka$^{?}$u čà-kúká-ún $^{?}$uù ʂiko pesú 12. hà-ní-kà-sá-tiñu ^{n}də-núní-de hín-ñaní-de. 13. te-nù-ní-kà-ni$^{?}$ìn-dé ʂù$^{?}$ún 14. te-nì-kà-k chì $^{?}$uù ñanì-de čà-súčí-ún.

15. te-bina nì-kà-ni$^{?}$ìn-žò ʂú$^{?}$ún hín-ná$^{?}$án-žó. 16. te-^{n}dé-žóǫ́ ku-^{n}dá$^{?}$á ʂú$^{?}$ún bína-na, $^{?}$áčí-de.

17. žúan-na te-nì-kačì čà-súčí-ún, 18. ba$^{?}$à-gà, ná-kú-^{n}dá$^{?}$á ñaní-žò čá-ñá$^{?}$nu žá$^{?}$a, 19. čì-kúu-de čà-$^{?}$a-^{n}déé, $^{?}$áčí-de.

20. žúan-na te-nì-ki$^{?}$in čà-ñá$^{?}$nu-ún ʂù$^{?}$ún ká-^{n}dá$^{?}$á-de. 21. te-nì-kè-kožo-de bài ^{n}di-kožo-de $^{?}$iči bé$^{?}$e-de. 22. te-čà-ñá$^{?}$nu ^{n}díso ʂù$^{?}$ún-ún 23. nì-ke-tá$^{?}$an-de hín-$^{?}$ɔ́ən čà-ñá$^{?}$nu $^{?}$inì $^{?}$iči. 24. te-nì-kačì-de híín čá-ñá$^{?}$nu-ún, 25. tátà, kuní-ná $^{?}$ən-konsehó, hà k^{w}á$^{?}$a-ní nuù-ná, $^{?}$áčí-de.

26. te-nì-kačì čà-ñá$^{?}$nu-ún hín-čá-^{n}díso ʂù$^{?}$ún-ún, 27. te-nà-ún konsehó kuní-rò.

28. konsehó, nà-ún konsehó kú-hà ñá-bà$^{?}$a-máá-ní, 29. te-čà$^{?}$u-ná-ní, $^{?}$áčí-de.

30. te-k^{w}à$^{?}$a-ró $^{?}$úù ʂiko pesú žà$^{?}$u-rì, 31. $^{?}$áčí čà-ñá$^{?}$nu-ún jín-čá-^{n}díso ʂù$^{?}$ún-ún.

32. te-nì-kačì čà-^{n}díso ʂù$^{?}$ún, 33. mà-žú$^{?}$ú-ní, či-k^{w}à$^{?}$a-ná, 34. nì-kačì-de jín-čá-ña$^{?}$nu-ún.

35. žúan-na te-nì-kačì čà-ñá$^{?}$nu-ún hín-de, 36. žà$^{?}$á ná-kačí-rì kuni-ró: 37. hà-$^{?}$ɔ́ən, mà-sá-ró žá$^{?}$á, mà-sá-ró žúán; 38. mà-ké-tá$^{?}$án-ró hín-ni-$^{?}$əən tá$^{?}$án-ró há-ká-^{n}dà-ñáá ʂinì. 39. hà-$^{?}$úù, nú-k^{w}a$^{?}$àn-rò bé$^{?}$e ñà-žəbə, 40. mà-^{n}dé$^{?}$é-ró nà-ún kúu $^{?}$inì bè$^{?}$e-i, 41. mà-kakán tù$^{?}$ún-ró-i nà-ún tù-^{n}dó$^{?}$o tá$^{?}$àn-i; 42. má-i hiní nà-ún kúu hà-tá$^{?}$àn-i, 43. nà-ún ^{n}dó$^{?}$o-i, 44. má-i ná$^{?}$án. 45. hà-$^{?}$uní, nú-k^{w}a$^{?}$àn-rò, 46. te-kaka-ró $^{?}$iči ^{n}dóó $^{?}$iči ^{n}dáà; 47. koto mà-káka-ró $^{?}$iči žák^{w}á, $^{?}$iči k^{w}útɔ́. 48. ^{n}daà ^{n}daà kaka-ró. 49. $^{?}$áčí-de híni čà-^{n}díso ʂù$^{?}$ún-ún. 50. bina te-k^{w}à$^{?}$a-ró $^{?}$úù ʂiko pesú-rì-na 51. $^{?}$áčí-de híni čà-^{n}díso ʂù$^{?}$ún-ún.

52. žúan-na te-nì-ki$^{?}$in čàa ^{n}díso ʂù$^{?}$ún-ún ʂù$^{?}$ún, 53. ní-ka$^{?}$u-de $^{?}$uù ʂiko pesú nuù čáa nì-hà$^{?}$a $^{?}$unì konsehó nuù-dé. 54. te-nì-hika-de k^{w}a$^{?}$àn-de 55. te-nì-nà-ke-tá$^{?}$an-de hín-ñaní-de $^{?}$inì $^{?}$iči, 56. čì-sɔ́ən sɔ́ən $^{?}$iči k^{w}á-^{n}gožo-de. 57. te-nì-na-kani-de tù$^{?}$un nuù ñaní-de $^{?}$uù čàa súčí-ún, 58. hà-ní-hà$^{?}$a-de $^{?}$uù ʂiko pesú nuù čáa ni-hà$^{?}$a $^{?}$unì konsehó nù-dé. 59. te-nì-kà-kitì $^{?}$inì $^{?}$uù čà-súčí-ún nuù ñaní-de čà-ñá$^{?}$nu-ún 60. hà-ní-ʂnáa-dé ʂù$^{?}$ún.

61. te-nì-kačì əən čà-súčí-ún, 62. ná-kí$^{?}$-òn hín-ná$^{?}$á-žó, 63. té-ná-ké-^{n}dòo hiàn. 64. či-čà-ñáá kúu, nì-ʂnáa ʂú$^{?}$ún-žó, 65. $^{?}$áčí-de híni $^{?}$ə^{n}gà ñanì-de čà-lúlí-gà. 66. te-nì-ke-kožo-ni-de k^{w}a$^{?}$àn-de. 67. te-nì-ke-^{n}dòo má-$^{?}$ɔ́ən-nà čà-ñá$^{?}$nu-ún. 68. te-čà-

[9] Phrase 219.
[10] Phrase 222.

súčí-ún nì-ki?in-ni-de ?əən ?iči kʷútɔ́ kʷá?àn-de.

69. te-čà-ñá?nu-ún nì-ke-ⁿdòo ⁿdá?ú-de ká-ⁿdiì-de. 70. te-nì-ⁿdu-kʷí?à ?inì-de. 71. te-suni nì-ki?in tuku-de ?iči kʷútɔ́ kʷá?àn-de núú. 72. te-nì-nà-kani inì-de ?unì konsehó 73. hà-ní-ka?àn čàa nì-ki?in ?uù ʂiko pesú-de. 74. te-nì-ⁿdío kába-de. 75. te-nì-nà-ki?in-de ?iči ká?nu 76. nátù?un nì-ka?àn čàa hà-ní há?a konsehó nuù-dé. 77. te-ñanì-de káha?àn-ni ?iči kútɔ́. 78. te-má-de nì-nà-ki?in-de ?iči ká?nu kʷa?àn-de. 79. te-kʷa?àn kʷa?àn-de. 80. te-nì-?ini nì-haà-de əən ñuù nù-?ío be?e réì nì-ⁿdòo-de. 81. te-tú-hiní-de 82. hà-?ío ña-sɔ́?ɔ́ čàa réì-ún presidyú, 83. nú?nì-ña nú-ñáa ?ə́ən hikà bé?e namà. 84. te-nì-kačì réì-ún híni-de. 85. bà?a-ni nì-kuu hà-ní-čaà-ró. 86. te-kuní-rì róó ?əən tiñu, 87. ?iči žá?a kii-ró, 88. ?áčí-de híni čàa nì-ki?in núu be?e. 89. žuan-na te-nì-haà-de híín-de 90. ?inì nuù ?ío ?əən-patyú nuù ⁿdikín ña-sɔ́?ɔ́-de, 91. te-nì-hikà tù?ún-de čà-ún, 92. mà-kú-kʷí?à ?inì-ró, 93. hiká tù?ún-rí róó, 94. ?á-hiní-rò nà-ún səkə̀ kú-hà-ñá-bà?a-rì ña?a žá?a, 95. ?áčí réì híni-de.

96. te-nì-kačì-de híni réì, 97. tátà, tú-hiní-ná nà-ún səkə̀ kú-jà-ñá-bà?a-ní ña-sɔ́?ɔ́-ní. 98. má-ní ná?án nà-ún səkə̀ kú-hà nú?nì ña-sɔ́?ɔ́-ní. 99. na-sù žúán ná-ⁿdúkú-ná bài-ná, 100. čì-be?e kú-hà-kí?in núu-ná bài-ná, 101. nì-kačì-de híni čà-réì-ún.

102. bʷénù, nú-sáá te-nú-tú-hiní-rò nà-ún səkə̀ kúu, 103. te-hiká tù?ún-rí róó. 104. te-nú-tú-hiní-rò, te-nì-kuu-ni nú-sáá. 105. te-nì-ku-ta?ù-rí nuù-rò. 106. te-ná-kí?-òn ?iči ?iní bè?e, 107. ?áčí-de híni čàa nì-ki?in núu be?e réì-ún. 108. te-žúan-na nì-ⁿdə̀bə kožo-de ?inì bè?e. 109. te-nì-nu-ⁿgòo-de nù-mesá hín-réì. 110. te-nì-kə̀bə ko?ò ní-kà-ku-ʂíni-de. 111. te-nì-táhí-de čàa kúu musú há-tíñu nuù-de 112. nì-hà-ⁿdáhí ñá-sɔ́?ɔ́-de. 113. te-nì-na-haà-ña ?iní bè?e nuù ká-ku-ʂíni-de-ún. 114. te-nì-kačì-de híni ña-sɔ́?ɔ́-de, 115. mà-kú-kʷí?à ?inì-rò ?íhà, 116. čì-ⁿdasa híka ?əən čàa ⁿdá?ú žá?a nì-čàa-de, 117. te-nì-kàku-ró bína. 118. čì-nú-túu, čì-?a-nì-hi?ì-rò núú. 119. te-bina na-kʷa-tá?ú-ró núù čáa žá?a, 120. čì-hà-čáa ⁿdá?ú žá?a, 121. te-nì-na-ni?ìn-rò ñú-žə́ba bína, 122. nì kačì réì híni ña-sɔ́?ɔ́-de.

123. žúan-na te-nì-hà?a-de ?əən hìto bà?a nì-kiši čàa nì-ki?in núu be?e-ún. 124. te-nì-hu-ⁿgàba-de nì-kiši-de.

125. bʷénù, te-nì-ku-ⁿdihìn ?ə́ⁿgà kəbə̀ šíàn-ún, 126. te-nì-ⁿdu-kòo tuku réì. 127. te-nì-kana-de ʂinì čáa nì-ki?in núu be?e-ún, 128. te-nì-ha?àn-de hín-de nù?ío ?ə́ⁿgà patyú ká?nu. 129. te-nì-kačì tuku čàa réì híni-de, 130. hiní-rò nà-səkə̀ kú-hà ñá-bà?a-rì yikə̀ žá?a.

131. tátà réì, ná-kačí-ná nuù-ní, 132. čì-tú-hiní-ná nà-səkə̀ kú-hà ñá-bà?a-ní žikə̀ žá?a, 133. ?áčí-de híni réì. 134. má-ní hiní nà-səkə̀ kú-hà ñá-bà?a-ní žikə̀ žá?a. 135. te-má-ní ná?án, nà-ún tiñu kú-hà-sá-ní híín. 136. nà-tú hiní-ná, 137. čì-nà-sù žúán ná-ⁿdúkú-ná bàhi-ná ?inì bè?e-ní, tátà réì, 138. nì-kačì-de híni čàa kúu réì-ún.

139. bʷénù, ?áčí réì, te-nú-tú-hiní-rò nú-sáá.

140. tú-hiní-ná tátà, 141. čì-tú-ⁿdúkú-ná nà-ún hà-ⁿdó?o ñà-žəbə ?iní bè?e-i, 142. čì-be?e-ni ⁿdúkú núu-ná, 143. čì-kúu-ná ñà-žəbə ⁿdá?ú kí?in núu-ná be?e. 144. tú-bàhi-ná ná-ⁿdúkú-ná hà-ⁿdó?o-ní ?inì bè?e-ní, 145. ?áčí-de híni réì.

146. te-nì-kačì réì híni-de, 147. ?aà, te-na-hà tú-hiní-rò hà-ⁿdó?o-rì ?inì bè?e-rì nú-sáá, 148. nì-kačì réì híni-de. 149. žúan-na te-nì-kačì réì, 150. bina te-nì-ku-ta?ù-rí nuù-rò nú-sáá, 151. čì-nì-hinì-rì hà-čáa bà?a kúu-rò. 152. te-kačì-rò nà-saa kú-hà-ní-tau žà?u-rì nuù-rò, 153. ?áčí réì híni-de.

154. te-nì-kačì-de híni réì, 155. tú nà-ún taú žà?u-ní nuù-ná, 156. čì-nà-sù žá?u-ná hikán-ná bàhi-ná, 157. čì-be?e-ni kí?in núu-ná, 158. nì-kačì-de híni réì.

159. bʷénù, te-nú-tú-kuní-rò kačí-rò nà-saa kúu žà?u-ró, 160. te-žá?a ?ío ?əən pistolá, 161. te-?ío sa?ma-ro há-kú?un žačì-ro, 162. te ?əən kʷažú ?oⁿdè híín siža žá?a há?a má-rí hà-kóso-ro. 163. te-nì-kuta?ù-rí nuù-rò. 164. te-kʷá?án, 165. te-ná-ⁿdé?é má-rí ⁿdasa haà hà-čú-ⁿdá?á má-rí

hà-ní-taù žà?u-rì nuù-rò, 166. ní-kačì réì híni čàa nì-ki?in núu be?e.

167. žúan te-nì-na-kʷà-tá?ú-de nuù réì, 168. te-nì-nà-ki?in-de ?iči báhi ⁿdii-de be?e-de. 169. te-nì-na-haà-de be?e-de. 170. te-nì-hito-de ká-ⁿčaà ña-só?ó-de, 171. te-sè?e-de ká-túu ⁿdée nuù hitó-ñá. 172. žúan-na te-nì kitì ṣaàn ?iní-de. 173. te-nì-stáa-de pistolá hà-ní-hà?a réì-ún nù-dé 174. te-təbó-de sè?e-de-nú.

175. žúan-na te-nì-kačì ña-só?ó-de híín-de, 176. ?aì pàpáà, nú-nì-ⁿčaà-rò, 177. nú-má-ró kúu, 178. te-mà-ká?ni-ro sé?e-žó, čì-sè?e-žó kúu-i, 179. nì-kačìña-só?ó-de híni-de. 180. žúan-na te-nì-ⁿdàhi ?inì-de. 181. te-nì-nu-ⁿgòo-de híín ñá-só?ó-de híín-sé?e-de. 182. te-nì-hà-ku-ⁿčaà-de ná-ⁿdakàn ta?ù-dé nuù ñá-só?ó-de híín sé?e-de.

183. te ?ama nì-hà-kožo ?unì kətə ⁿdéé híín ?okó ?ušì soldadó ká-ⁿdìso-tò ṣú?ún. 184. ?uù-tò ká-ⁿdìso ṣù?ún platá. 185. te-?əən-tò ⁿdíso ṣù?ún ?oró, 186. hà-ní-ču-ⁿdá?á réì nì-ku-ta?ù-dé hà-tú-ní-ná-ⁿdúkú-de nà-ún hà-ⁿdó?o réì ?inì bè?e-de. 187. hà-žúán kú-ha ní-hà?a réì-ún ?əən súan ṣù?ún 188. ní-ku-ta?ù čáa nì-ki?in núu be?e nì-kiši-de.

189. te-ⁿde-ⁿdúú ñanì-de čàa súčí-ún nì-kà-ku-ñáá ṣinì-de, 190. čì-kʷa?àn-de kʷa?àn-de ?iči kútó. 191. te-nì-hà-kožo-de nù-?ió ?əən ša?bà kana, 192. nù-tuká ñà-žəbə ká-hika, 193. čì-?ìo ṣaàn káa. 194. te-žúan nì-hi?ì ⁿdəži ká-túu. 195. te-nì-hà-kožo ⁿde-ⁿdúú čà-súčí-ún. 196. te-nì-kà-hito nuu-de, 197. hà-ká-túu ?ə́ən ⁿdəži nì-kà-ha?ni ñá-kʷì?ná. 198. te-nì-kačì-de hí-ná?an-de, 199. te nà-ún ní-ta?àn čàa žá?a hà-ní-hi?ì-de ká-túu-dé žá?a, ?áčí-de. 200. te-nì-haà-de ká-hito nuu-de nù-ⁿdóži-ún 201. te-tú-ní-ká-hinì-de hà-ká-šùkú sóldadó ká-ⁿdìto-de ⁿdəži nì-hi?ì-ún. 202. te-tú-ní-ká-sáa-de kʷeⁿdá hà-ká-šùkú sóldadó. 203. te-sa-naa ?iní-de, te-nì-ke-kožo-ni soldadó nuù-de.

204. te-nì-kačì soldadó-ún híni-de, 205. nà-ún ká-sáa-ró hí-ná?án-ro, 206. ?áčí soldadó-ún híni-de. 207. te-bina čì-sa-stilá nì-ka?àn-ún híín-de hí-ná?an-de.

208. quién lo mató este muerto, 209. nì-kachì soldadó-ún híni-de.

210. te-nì-kačì-de híni, 211. čì-tú-kú-tuní ka?àn-de sà-stilá, 212. nosotros señor, 213. ?áčí-de híni soldadó-ún.

214. te-nì-kačì tuku soldado-ún hín-de, 215. porqué lo mataste.

216. te-nì-kačì tuku-de, 217. porque simos, 218. ?áčí-de híni soldadó.

219. ahora tienes que ir a la carcel, 220. ?áčí tuku soldadó.

221. žúan-na te-nì-kačì-de hí-ná?an-de, 222. razón será, 223. ?áčí-de híni soldadó.

224. žúan-na te-nì-ki?in-ni soldadó ⁿda?a-dé hín-ná?an-de 225. nì-hu?nì-ni, 226. te-kʷà-ⁿgožo-ni híín-de oⁿdè be-kàa, 227. ní-kàbə kožo-de hí-ná?an-de.

228. žúan-na te-básá ní-hinì ñanì-de čàa ñá?nu-ún. 229. te nì-ki?in-de ṣù?ún ní-hà-taba-dé ñanì-de be-kàa. 230. te-suni kʷa?à kanə́ há-ní-ka-?lin-de be-kàa 231. te-básá ní-hu-kù?n ?inì-de 232. hà-ná-sù tú?un bà?a kú-hà-ní-kà-ka?àn-de híín sóldadó-ún. 233. žùán ní-kà-hu-ⁿgožo-de be-kàa. 234. nì-kuu.

FREE TRANSLATION

The Story of What Happened to a Man a Long Time Ago

1. He had some difficulty during the days he was engaged. 2. He was looking for his wife. 3. He borrowed forty pesos to get married with. 4. And the days set [for repaying] the borrowed money were fulfilled. 5. And he didn't get money to go back to the one from whom he borrowed. 6. So he took his wife and left her. 7. And he discussed the affair with his two younger brothers. 8. And they went away to work where there was an hacienda of a rich man. 9. There they worked for forty years. 10. And when the days were finished to come back with his brothers, 11. then the rich man counted out forty pesos 12. for the work of the three of them including the brothers. 13. And after they got the money 14. the younger brothers said,

15. "Now we have gotten our money. 16. But which of us should carry the money now?" they said.

17. Then one of the younger brothers said, 18. "It is better to let our older brother here carry it, 19. because he is bigger," said he.

20. Then the older brother took the money to carry it. 21. And they went along returning toward their house. 22. And the older fellow who was carrying the money 23. met an old man in the way. 24. And he said to the old man, 25. "Sir, I would like a piece of advice, that you may give me."

26. And the old man said to the fellow carrying the money, 27. "What advice do you want?"

28. "Oh, any advice you have, 29. and I'll pay you for it," he said.

30. "And you'll give me forty pesos in payment?" 31. said the old man to the fellow carrying the money.

32. And the fellow carrying the money replied, 33. "Don't you worry, I'll give it," 34. he said to the old man.

35. Then the old man said to him, 36. "Let me tell you this: 37. First: don't do this, and don't do that; 38. don't get together with any of your comrades who are unbalanced in their heads. 39. Second: if you go into somebody's house, 40. don't look around to see what is in their house, 41. don't ask them what difficulties they are meeting; 42. they themselves know what difficulties they are facing, 43. what troubles they are having, 44. they know themselves. 45. Third: when you are traveling, 46. then take the straight road, the highway; 47. watch out lest you take the crooked road, the shortcut. 48. Just keep right on the highway," 49. said he to the fellow carrying the money. 50. "Now give me my forty pesos," 51. he said to the fellow carrying the money.

52. Then the fellow carrying the money took the money, 53. and counted out forty pesos and gave it to the man who gave the three pieces of advice to him. 54. And he walked along 55. until he met his brothers in the road, 56. since they had come by different roads. 57. And he told his two younger brothers 58. that he had given the forty pesos to the man who had given him the three pieces of advice. 59. And the two younger brothers were angry with the older brother. 60. for losing their money.

61. And one of the young men said, 62. "Let's go, 63. and let that fellow stay. 64. He's crazy, he lost our money," 65. said he to the other smaller brother. 66. And they went away. 67. And the older fellow stayed there all by himself. 68. And the younger fellows took a shortcut and went along it. 69. And the poor old fellow was left standing. 70. And he became very sad. 71. And he likewise started to take the shortcut. 72. Then he remembered the three pieces of advice 73. that he was told by the man who took his forty pesos. 74. And he turned around. 75. And he then took the big road 76. like the man told him to, who gave him the advice. 77. And his brothers took the shortcut. 78. And he took the big road. 79. And he went and went. 80. And as it grew late he arrived at a town where there was the house of the king, and stayed there. 81. And he did not notice 82. that the wife of the king was in the prison, 83. tied in the shadow of the wall of a stone house. 84. And the king said to him, 85. "It is well that you have come. 86. Now I want you to do something, 87. come over this way," 88. said he to the man who borrowed [a place to stay in] the house. 89. Then he came with him 90. into a patio where his wife was bound, 91. and he asked the man, 92. "Don't worry, 93. I'm asking you, 94. do you know what is the reason that I have my wife here?" 95. the king asked him.

96. And he said to the king, 97. "Sir, I do not know what is the reason that you have your wife [here]. 98. You are the one who knows what is the reason why your wife is bound. 99. I have not come looking to find out something like that, 100. since

it is just a place in the house that I am borrowing," 101. he said to the king.

102. "Ok then, if you don't know what the reason is, 103. even though I am asking you. 104. And if you don't know, then that is that. 105. And thank you. 106. Let's go into the house," 107. said he to the man who borrowed a place in the king's house. 108. Then they entered the house. 109. And he sat down at the table with the king. 110. And plates were brought in and they ate supper. 111. And he sent a servant who worked for him 112. to go and untie his wife. 113. And she came into the house where they were eating supper. 114. And he said to his wife, 115. "Don't worry, Daughter, 116. because by chance this poor fellow here came, 117. and you are now saved. 118. Because if he had not come, you would have died. 119. And now thank this man, 120. since because of this poor fellow, 121. you have now re-gained the world," 122. the king said to his wife.

123. Then he gave a good bed to the man to sleep in, the man who borrowed a place in the house. 124. And he lay down and slept.

125. Ok. It dawned on the morrow. 126. And the king got up again. 127. And he called the man who had borrowed a place in the house, 128. and he went with him into a big patio. 129. And the king said to him again, 130. "Do you know why it is that I have these bones here?"

131. "Mr. King, let me tell you, 132. that I do not know what the reason is that you have these bones," 133. he said to the king. 134. You are the one who knows what the reason is that you have these bones. 135. You are the one who knows what you are doing with them. 136. I do not know, 137. since that is not what I came looking for in the house, Mr. King," 138. he said to the man who was the king.

139. "Ok," said the king, "if you do not know, then."

140. "I do not know, sir, 141. because I am not seeking to find out what troubles people have in their houses, 142. since I am just a poor person 143. borrowing a place in a house. 144. I do not come seeking what troubles people have in their houses," 145. said he to the king.

146. And the king said to him, 147. "Oh, and why do you not know what troubles me in my house?" 148. said the king to him. 149. Then the king said, 150. "I am very grateful to you then, 151. since I have seen that you are a good man. 152. Now tell me how much I owe you," 153. said the king to him.

154. And he said to the king, 155. "You do not owe me anything, 156. since I did not come asking for pay, 157. since it was just for a place in the house," 158. said he to the king.

159. "Ok, then if you do not want to say how much I owe you, 160. then here is a pistol, 161. and some clothing to put on for the moment, 162. and I'm giving you a horse with a saddle for you to ride on here. 163. And thank you very much. 164. Now go, 165. and let me see how I shall send to you that which I owe," 166. said the king to the man who borrowed a place in the house.

167. Then he took leave of the king, 168. and again took the road returning to his house. 169. And he came to his house. 170. And he saw that his wife was there, 171. and his son was kneeling down at her knees [presumably to have fleas picked from his hair]. 172. Then he got very angry. 173. And he took out the pistol that the king had given him. 174. And he was about to shoot his son.

175. Then his wife said to him, 176. "Oh, papa, if you have come back, 177. if it is you, 178. then don't kill our son, because this is our son," 179. said his wife to him. 180. Then he relaxed. 181. And he sat down with his wife. 182. And he began to ask for forgiveness from his wife and son.

183. And suddenly there came three big animals, carrying money, and thirty soldiers. 184. And two of the animals were carrying

silver; 185. one was carrying gold, 186. which the king had sent in thanks for his not seeking to find out the troubles in the king's house. 187. For that reason the king gave him that amount of money 188. in gratitude to the man who borrowed a place to sleep in the house.

189. And both of the younger brothers were foolish, 190. because they kept going along the short road. 191. And they came to a very wild ravine, 192. where no people travelled 193. because it was very frightening. 194. And there a corpse was lying. 195. And both of the younger brothers came up to it. 196. And they peered down, 197. and saw a corpse that robbers had killed. 198. And they said, 199. "What happened to this fellow that he is lying here dead?" they said. 200. And they came up and looked down at the corpse. 201. And they did not see that there were some soldiers there keeping watch over the corpse. 202. And they did not notice that the soldiers were there. 203. And suddenly the soldiers came up to them.

204. And the soldiers said to them, 205. "What are you doing?" 206. the soldiers said to them. 207. Now they spoke to them in Spanish.

208. "Who killed this person?" [Spanish], 209. said the soldiers to them.

210. And they replied, 211. since they did not know how to talk Spanish, 212. "We, sir," [Spanish] 213. said they to the soldiers.

214. And the soldiers said again to them, 215. "Why did you kill him?" [Spanish]

216. And they said again, 217. "Just because," [Spanish] 218. said they to the soldiers.

219. "Now you must go to jail," [Spanish] 220. said the soldiers.

221. Then they said, 222. "That would be reasonable enough," [Spanish] 223. said they to the soldiers.

224. Then the soldiers took them by the hand 225. and tied them, 226. and went with them to the jail, 227. and they all entered in.

228. Later on the older brother heard about it. 229. And he took money and went and got his brothers out of jail. 230. And it was likewise many days after they had been in jail 231. before they understood 232. that the words they spoke to the soldiers were not good. 233. That was the reason they went to jail. 234. It is finished.

COMPONENTIAL ANALYSIS OF SIERRA POPOLUCA

CHARLES F. HOCKETT
CORNELL UNIVERSITY

0. Plan and Purpose
1. Listing of Features
2. Simultaneous Bundles
3. Are Our Features Minimal?
4. Sequences of Bundles
5. Limitations Between Syllables
6. Other Features of Distribution
7. Determined Bundles
8. Grouping of Bundles
9. The Syllable-Nucleus Sonority Feature
10. Summary

0. Plan and Purpose. In this paper[1] we undertake an inquiry into phonemic structure from a somewhat novel point of view,[2] using as subject matter various Indian languages the phonemics of which have been described in this journal or elsewhere. The inquiry cannot immediately result in the revelation of previously unknown facts about the languages examined, and, indeed, may even ultimately leave us just where we were before the study was undertaken; the hope is, of course, that light may be shed on certain problems about which at present there is methodological disagreement.

Phonemic analysis of a kind was first performed long before anyone had anything to say explicitly on the subject, by those early benefactors of mankind who invented alphabetic writing or adapted such writing to languages theretofore unwritten. All such writing has been linear, or essentially so: distinct symbols were arranged one after another, in a one-to-one correspondence (with various discrepancies) with a linearly arranged set of articulatory or acoustic events which constituted a stream of speech. With the development of modern linguistics and the explicit formulation of the phonemic principle, this long-standing habit of visual representation has taken the shape of an unstated LINEARITY ASSUMPTION: the distinctive sound-units or phonemes of a language are building-blocks which occur in a row, never one on top of another or overlapping. This assumption has been lifted in certain patent cases: features of stress or tone, for example, which normally stretch over more than a single vowel or consonant, have been called NON-LINEAR or SUPRASEGMENTAL, in contrast to the linear or segmental vowels and consonants. But in many other cases, even when it is perfectly obvious that two different parts of the speech tract are performing simultaneously operations which are linguistically relevant, the simultaneous total event has been interpreted as the 'actualization' of a 'really' sequential cluster—as, for example, when the nasalized flap of English painting is interpreted as /nṫ/.[3]

The point of view here assumed is, essentially, simply that of removing the linearity assumption from among our working principles. The task of phonemic analysis, in the narrowest sense, then becomes: (1) to determine the set of independent or

[1] And in others to follow on the same subject.

[2] But not a point of view without all precedent. The work of the Prague school, particularly of Jacobson, and of some more recent investigators in this country such as Sebeok and Garvin, involves (in terms of the analogy given in 2 of this paper) analysis of the structure of chords, without too much regard for occurrent progression of chords or contrapuntal analysis. Harris (Simultaneous Components in Phonology, Lg. 20.181–205, 1944) develops contrapuntal analysis from a somewhat different angle than that involved here. See also my System of Descriptive Phonology (Lg. 18.1–23, 1942), except 6–7; and my Peiping Phonology (JAOS 67 no. 4).

[3] The example, but not the point of view criticized, is from Harris, op. cit.

only partially dependent features of articulation or of sound which are found in a language, and (2) to determine the arrangements—either linear or otherwise—in which those features occur in utterances. Linear or almost linear orthographies are a matter of extreme convenience, and certainly it is safe to say that such a notation is always possible; but the task of devising orthographies is not part of phonemics in the narrowest sense. Phonemic analysis is necessarily involved in the devising of writing systems (other than the clumsy morphemic type of Chinese), but so are other considerations; and phonemics, in its turn, may be pursued for ends other than orthographic.

At the very outset it must be said that we do not know as yet just how to go about the task we have chosen. For one thing: shall we operate in terms of recurrent motions and positions of the speech organs, or in terms of sound-features in the acoustic sense? The latter choice might be highly desirable if it were possible, but as yet, despite a number of efforts in that direction, it seems not realistically feasible.[4] So we choose the first alternative, save in a few transparent cases such as pitch and stress—and, indeed, the terminology of pitch could be taken as a convenient shorthand for a much more clumsy articulatory description in terms of rate of vibration of the vocal cords. Other shadowy areas will reveal themselves as we proceed.

We shall use the term COMPONENT for an 'independent or only partially dependent feature of articulation or sound,' and the term FEATURE for something which may or may not turn out, upon completed analysis, to be a component.[5] Components and features will be represented by bold-faced symbols, in the specific values assigned during the discussion. To indicate simultaneity of two components, we print one symbol above another; which is above and which below is, of course, arbitrary. The term PHONEME will mean any one of the bundles of one or more simultaneous or immediately adjacent features which it is convenient to represent, in linear orthography, by a unit symbol; such symbols will be enclosed in slant lines.

As our first subject we choose Sierra Popoluca, as reported by Ben Elson, IJAL 13.13–7 (1947). Needless to say, no remarks made in this article or in subsequent ones of the series should be construed as criticism of the previous author's handling of the material, which in all cases is based on premises other than those which guide the present investigation.

1. Listing of Features. **P** = initiation of chest-pulse. The events between one **P** and the next constitute a SYLLABLE. According to Elson, there is a single chest-pulse in /muʔk/ *grass*, but two each in /huʔŋ/ *owl* and in /ˈnaʔa/ *gum*. It seems likely, however, that the chest-pulse arrangement in /huʔŋ/ is comparable to that in English water, hammer, button, etc.: a single chest-pulse, though with two peaks of sonority,[6] in contrast to English ham and S. P. /muʔk/, with one chest-pulse and one peak of sonority, and to English blackbird and S. P. /ˈnaʔa/, with two of each. If this is so, then the chest-pulse or stress syllable and Elson's phonemic syllable are identical throughout. We here assume that this conclusion is correct.

S = high stress, in contrast to lower stress for which no symbol is supplied. **S** begins simultaneously with a **P**, and stretches throughout the syllable; some syllables have this long component and some do not.

Somewhere within each syllable occurs,

[4] I am so informed by Cowan.

[5] This terminology seems easier to handle than that in Peiping Phonology: distinctive feature for what is here called simply feature, determining feature for component, and determined feature for features that are not components.

[6] Bloomfield, Introduction to the Study of Language, New York, 1914; ch. 2 §10.

once, **v** = nuclear sonority (peak of sonority).

Three features involve the glottis: **G** = closure, **H** = open and quiescent, **V** = in vibration (voicing). In a sense **H** is a 'zero feature'—absence of both **G** and **V**—but we supply a symbol for it as a matter of convenience.

Two features involve the velick: **O** = closed (oral), and **N** = open (nasal). In S. P., where **G** occurs the distinction between **O** and **N** is irrelevant; otherwise every simultaneous bundle includes **O** or **N**.

k = dorso-velar closure; where this component is not involved, the dorsum is neither in contact with the velum not in spirantal proximity thereto.

For the rest of the tongue: **t** = apico-dental closure; **tᵛ** = lamino-alveolar closure; **s** = apico-dental slit spirantal proximity; **š** = lamino-alveolar spirantal proximity; **R** = apico-dental trill position (with the muscles properly tense and lax so that the tip will vibrate in the passing air current); **L** = apico-dental closure with (non-spirantal) lateral opening; **i, e, u, a** = respectively high-front, low-front, high-back, and low-back tongue-surface contours, with neither closure nor spirantal proximity. When none of these components is involved, the tongue is not in any position that would give an acoustic effect, or else other closures or approximations are sufficient to drown out any such sonority or friction.

For the lïps: **p** = bilabial closure; **r** = lip rounding.

This list includes all the ARTICULATORY features which seem to be involved in S. P. Later we shall discuss, and shall have to recognize, certain components of ARRANGEMENT.

2. Simultaneous Bundles. At this point we initiate an analogy between this type of phonological analysis and the analysis of music.[7] In analyzing music, one operates in either (or both) of two ways: either HARMONICALLY or CONTRAPUNTALLY. Any simultaneously sounding group of tones (analogous to our features) is a chord; one classifies the occurrent chords on the basis of their constituent tones, and then lists the sequences in which such chords occur. Such procedure is harmonic. Any sequence of individual tones is a melody; in contrapuntal analysis one observes, and classifies, the way in which two or more melodies are interwoven, developing simultaneously. Contrapuntal analysis involves harmonic analysis, because the constituent tones of the separate melodies which happen to be occurring at a given time form a chord of one kind or another. In this section and in **3** and **4**, we are, so to speak, making a harmonic analysis of Sierra Popoluca utterances, which will be quite similar to the analysis given by Elson; after that we attempt some portions of the contrapuntal analysis.

Excluding, for the moment, **P** and **S** from consideration, the remaining features of S. P. occur in the following simultaneous bundles. To each bundle we assign a linear symbol (a simple notation, a 'figured bass' for the whole chord):

p t tᵛ k
O O O O = /p t tᵛ k/;
H H H H

p t tᵛ k
O O O O = /b d dᵛ g/;
V V V V

p t tᵛ k
N N N N = /m n ñ ŋ/;
V V V V

[7] This comparison serves a very useful heuristic function for those who are acquainted with musical analysis: the analogies are so close that the detailed and intricate analysis to which western music has been subjected offers substantial clues for the present linguistic procedure. See, e.g., Percy Goetschius, Elementary Counterpoint, New York, 1910.

```
p t tʸ k
N N N N = /M N Ñ ɲ/;
H H H H

s š R L
O O O O = /s š r l/;
H H V V

      r r
i e u a u a
O O O O O O = /i e ĭ a u o/;
V V V V V V
v v v v v v

      r r
i e u a u a
O O O O O O = /I E Ĭ A U O/;
H H H H H H

        r
      i u
      O O = /y w/;
      V V

        i
        O = /Y/;
        H
      O
G H V = /ʔ ʿ ə/.
```

The last of these, **V**, has **O** or **H** indeterminately.

We give a few whole words in this notation, primarily to indicate that while analytically it may be of value, for any practical purpose a linear notation is needed—even in a discussion such as the present:

```
 i k - a
 O - - -  (O)
G V H - V G (H) = /ʔik.'kaʔ/ he killed it;
P     P
      S - - (-)
 v    v

      r
t u k - ui -
O - NO - -
HVGV - - H = /'tiʔŋguy/ metal;
P    P
S - - -
 v   v

p     p
 i tʸ  a
NON ?O - - (-)
V - - - HVG (H) = /'miñ.pa/ he comes.
P     P
S - - -
 v     v
```

In the above a hyphen means continuation of the last feature indicated.

3. Are Our Features Minimal? The problem immediately confronts us as to whether we have carried the break-up into features as far as we should. Our components **p**, **t**, **tʸ**, and **k** stand for four different oral closures, respectively bilabial, apico-dental, lamino-alveolar, and dorso-velar. Do these four not have a feature in common, and each a residuum not shared with the others? That is, is not **p** further analyzable into a feature of labial position and one of stop closure? For the moment let us use the symbols **p**, **t**, **tʸ**, and **k** for these four positions, instead of in the senses previously assigned, and extract also a feature of 'oral stop closure,' **T**. /p t tʸ k/ would then be

```
p t tʸ k
T T T T,
O O O O
H H H H
```

and two of these, **t** and **tʸ**, we would recognize also with another new component, **S** = spirantal proximity, in

```
t tʸ
S S
O O = /s š/.
H H
```

It is apparent that with this further break-up we have shifted our logical grounds. In our earlier statement, the three phonemes /t d n/ contain a component **t** which is identically the same in the three cases—the same motion or position of the same flexible part of the speech tract against the same inflexible part thereof.[8] The **O** of /t d/ is

[8] Or, at least, the range of variation between a /t/ and an /n/ is no greater than that between various /t/'s.

likewise identically the same in the two, and the V in /d n/. But when we extract 'smaller' constituents, a t = dental position, a T = oral stop closure, and so forth, what we are saying is that in, for example,

$$/\text{p t}/ = \begin{matrix} \text{p} & \text{t} \\ \text{T} & \text{T} \\ \text{O} & \text{O} \\ \text{H} & \text{H} \end{matrix},$$

the SIMILARITY in kind of motion and position of the lips in the first case, of the tongue-tip in the second, constitutes a separable feature.

An analogy might help. Suppose a man scratches his nose while chewing. Later he scratches his ear (against a post, instead of with his hand) while chewing. On our first basis, 'chewing' is a feature, 'nose-scratching' is a feature, and 'ear-scratching' is another. On the second basis, 'chewing' is as before, but 'scratching' is a feature by itself, and 'nose-' and 'ear-' are separate and separable features; 'scratching' is obviously a different kind of extraction from the totality than is 'ear-scratching' or 'nose-scratching.'

There seems to be some justification for the second alternative. The oral cavity is one unit of the total sound-producing apparatus used in speech. A complete closure anywhere in it will have at least the effect of cutting the outgoing air off from passage through the entire chamber; given identical velick position and constant functioning in the throat and below, two different spirantal closures likewise will have comparable effects. Despite this plausible basis for the further break-up of features, we will not take the proposed additional step. On an articulatory basis it is not too difficult to do so for stops and spirants, but it becomes quite difficult in handling laterals, trills, and the like; when and if we can perform operations comparable to those of the present paper in acoustic terms, or with greater aid from acoustical phonetics, such further analysis may prove more clearly feasible.

4. Sequences of Bundles. We first describe sequences from one **P** to the next, then limitations in terms of what precedes or follows.

Simultaneous with **P** occur: /p t tʸ k b d dʸ g m n ñ ŋ M N Ñ *Ɲ* s š r l I E Ĭ A U O y w Y ʔ/—that is, all of the bundles listed in **2** except /i e ĭ a u o ˈə/.

/t/ may be followed by /s r/, /tʸ/ by /š/, and /k/ by /r/.

Any initial bundle, and any of the clusters of two just listed, may be followed by any of the set /i e ĭ a u o/, save that /I/ is followed only by /i/, /E/ only by /e/, etc. for /Ĭ A U O/.

In the two syllables of /ˈti·t.tit/ *mestizo* one has the same vocalic bundle (bundle including component v), but the two are obviously in contrast in some way. Theoretically we could say that in the first syllable the bundle /i/ occurs twice in succession, or else that it occurs only once, as in the second syllable, but is held longer. The first treatment would be comparable to a musical case in which a chord is played twice in succession, and the second analogous to a musical case in which a chord is held for a longer time than some other chords (a chord of half-notes, say, instead of quarter-notes). Since there is no indication in Elson's description of 'rearticulation' or the like for the second mora of a long vowel—which would be phonetically comparable to playing a chord twice—, we conclude that the second analogy is more accurate. The difference, then, is one of arrangement rather than of articulatory components: we must recognize a FEATURE OF ARRANGEMENT 1 = greater duration. Such a feature cannot, obviously, be said to occur either 'simultaneously with' or 'in succession with' any feature of articulation; it is, rather, a WAY in which certain features of articulation occur. For convenience, however, we use the linear symbol /·/, as does Elson, and write it arbitrarily after the bundle concerned. The contrasting feature of arrangement, relative shortness, is symbolized by absence of /·/.

Despite the different nature of /ˑ/, written after vowel symbols it parallels in distribution part of the distribution of G: a vowel symbol may be followed either by /ˑ/, or by /ʔ/, but not by both (within a single syllable). That is, once a vowel starts, it may either be held long or be cut off by a glottal stop, but not both. For our 'harmonic sequence' analysis, the analogy is even better, because there is considerable parallelism in what else can follow in the same syllable in the cases of vowel plus /ˑ/ and of vowel plus /ʔ/.

After vowel, vowel plus /ˑ/, or vowel plus /ʔ/, may follow: /p t tʸ k m n ñ ŋ y ps ts tʸš ks/ or zero. After vowel or vowel plus /ˑ/, but not after vowel plus /ʔ/, may follow /s š I E Ɨ A U O M N Ñ Ɲ/ (the last only in theory); but /I E Ɨ A U O/ occur only after, respectively, /i e ɨ a u o/ or those plus /ˑ/. Only after vowel plus /ˑ/ may occur /w/.

After /p t tʸ k/ in the last position mentioned may follow /ʻ/; after /n ñ ŋ/ may follow /ə/.

5. Limitations between syllables. Not all of the syllables outlined above occur in all positions. Limitations are as follows:

(1) Syllable-initial /M N Ñ Ɲ Y/ occur only when the previous syllable ends in /m n ñ ŋ y/ respectively; in any such position, syllable-initial /I E Ɨ A U O/ do not occur.

(2) Syllable-initial /d dʸ/ occur only when the preceding syllable ends in /ʔ/, /b/ only when the preceding syllable ends in /ʔ/ or /y/.

(3) Syllable-final /M N Ñ/ and theoretically /Ɲ/ occur only when not preceded by /ʔ/ and when the next syllable begins, respectively, with /m n ñ ŋ/; in this position /p t tʸ k/ do not occur.

(4) Syllable-final /ʻ/ occurs after /p/ save when the next syllable begins with /p/, after /t/ save when the next syllable begins with /t/, after /tʸ/ save before /tʸ/, and after /k/ save before /k g/. The sequences in which /ʻ/ appears are not paralleled by sequences identical except for the lack of /ʻ/.

(5) Syllable-final /ə/ occurs after /n/ when another syllable follows, save when that next syllable begins with /t N n/, after /ñ/ similarly save when the next syllable begins with /tʸ Ñ ñ/, and after /ŋ/ similarly save when the next syllable begins with /k Ɲ ŋ g/. The sequences in which /ə/ occurs are not paralleled by sequences identical except for the lack of /ə/.

(6) Syllable-initial /t d n s ts/ do not occur after a syllable ending in /tʸ ñ š tʸš/ or in one of the latter plus /ʻ/ or /ə/.

(7) The situation at the end of an utterance is not quite clear.[9] Elson writes (2.1 end) 'Short vowels in utterance-final position end in a lenis nonphonemic glottal stop, whereas long vowels end in a nonphonemic voiceless offglide.' But he writes both short final vowels and short vowels followed by final /ʔ/; in both cases, in his phonetic transcription between brackets he writes a final [ʔ]. If the 'lenis "nonphonemic" glottal stop' is phonetically like the phonemic final glottal stop, then short vowels simply do not occur in utterance-final.[10] Though there may be a difference (lenis versus fortis), we will accept for our purposes here the theory that there is none. We may similarly conclude (tentatively), from his second statement, that the 'nonphonemic' voiceless offglide after 'final' long vowels is actually the same element (involving H: /I/ after /iˑ/, /E/ after /eˑ/, etc.) that occurs elsewhere, and is therefore phonemic. With

[9] It is also not clear whether we must distinguish between 'word' and 'utterance'; most of Elson's examples are of 'word'-length. His only point which might distinguish 'word' and utterance is in his 3.2: S is always present in an utterance-final (not word-final) syllable which contains /ˑ/.

[10] Or read: 'word-final'? If the two glottal stops sound the same, Elson may have distinguished between them on the basis of what happens when additional suffixed material follows: some glottal stops may stay (his 'fortis, phonemic' type), and others disappear (his 'lenis, nonphonemic' type).

these interpretations, we may say simply: the final syllable of an utterance does not end with a vowel nor with /·/.

However, there is a further consideration. The final syllable of an utterance does not end with /m n ñ ŋ y/; but in such syllables one does find terminally what we may tentatively transcribe as /mM nN ñÑ ŋN̸ yY/. The relative duration of the **V** component and the **H** component in these bundles correlates with components **S** and **l** (/·/): if the final syllable bears **S** and the vowel is short, the **H** component is relatively longest; if it bears **S** and the vowel has **l**, or lacks **S** but the vowel does not have **l**, the **H** is relatively shorter; and if the syllable does not bear **S** and the vowel does contain **l**, the **H** component is shortest of all, approaching inaudibility.

We can conclude, therefore, that all utterances save those ending in /w/ or /ʔ/ end with a brief occurrence of component **H**, and, in our linear notation we may write simply /i e ɪ a u o i· e· ɪ a· u· o· m n ñ ŋ y/ instead of /iI eE/ etc. Indeed, it is possible (the data do not specify) that final /w/, as Elson writes it, is as much /wW/ as /y/ is /yY/, and that final /ʔ/ is as much /ʔˈ/ as final /p/ is /pˈ/; in this case our generalization could be complete: all utterances conclude with a brief phase of **H**, regardless of what other articulations are concerned.

The decision to write utterance-final /i e/ etc. instead of /iI eE/ etc. is a matter of notation, not of phonemics. The phonemic interpretation is that **H** in this position is automatic, a function of 'end-of-utterance.' The phonemic interpretation would remain even if we chose to use the more complicated writing.

6. Other features of distribution. Comparable to the feature of distribution **l** (**4**), there may also be a feature **b** = special shortness (the information is not precise). Elson posits two phonemes, /c/ and /č/, which have here been written as /ts/ and /tʸš/ respectively. He cites no cases of syllable-final /t tʸ/ followed by syllable-initial /s š/, but such may exist. Now it may well be that /c/ = /ts/ and /č/ = /tʸš/ are relatively shorter than such sequences as /ps/ and /ks/. If so, the shorter /t tʸ sš/ involved in his /c č/ would differ from the normal-length /t tʸ s š/ occurrent elsewhere by a feature of arrangement, **b**—we would symbolize this rather than its absence, 'normal length,' because the extra shortness is rarer.

On the assumptions that this is so, and that syllable-final /t/ or /tʸ/ do occur followed by syllable-initial /s š/, we are now in a position to eliminate one feature from the list of components, in either of two ways:

(1) If we call **b** a component (and use Elson's linear notation /c č/), then feature **P** can be eliminated. For in this case, the location of **P** is predictable in terms of the bundles which occur and the sequences in which they occur: **P** occurs at the beginning of an utterance, simultaneously with any single consonantal bundle between vowels, and simultaneously with the last member of any cluster of consonantal bundles flanked by vowels save in the cases /tr kr c č/, in which it is simultaneous with the first member of that sequence, whatever precedes in the same cluster. In this case **P** is not a component, and the syllable is an emergent, not a functioning phonological unit.

(2) If we start by postulating **P** as a component, than **b** can be eliminated. For in this case the sequences /ts/ and /tʸš/ have the feature **b** if they occur within a single syllable, but not if the second member of the sequence is simultaneous with **P**. In this case the syllable is a phonological unit.

It is possible that with more data one could choose unambiguously between these two alternatives. But it is also possible that at this point we reach an area of freedom of choice: the language relates **P** and **b** in such a way that either may be eliminated by assuming the other, but does not force us to make either choice.

The two alternatives about **P** have other implications, as we shall see.

7. Predictable bundles. From the distribution of /ˈ/ and of /ə/, it is clear that in terms of successions of bundles they are predictable. Linearly, if we write /VpkV/, for example, instead of /Vpˈ kV/, we know from our definition of the notation that the /ˈ/ is there. In terms of components, such a sequence is

p k
O--
H-- ;
P
(S)

after the **p** stops, there is a brief rest in the mouth, and then the **k** closure begins, while the **O** and **H** continue throughout. On the other hand, in /VppV/ one has

p-
O-
H- ,
P
(S)

with **p**, **O**, and **H** held throughout, and there is no change save the beginning of a new chest pulse.

Now a good deal depends on whether **P** is a componeṭ or not. If it is, then we state as follows: an arrangement of the features involved in /p t tᵛ k m n ñ ŋ/ and some others occur in which all the features begin towards the end of one syllable, and continue while nothing new is added save **P**. But if there is a change, after /p t tᵛ k/, to a different point of articulation, simultaneous with **P**, a phase of **H** (plus **O**) alone intervenes; similarly for /ə/.

If **P** is not a component, then we must recognize that such bundles as /p t tᵛ k m n ñ ŋ/ and a few others, as well as /i e ɪ a u o/, occur with the feature of arrangement /ˑ/, as well as without it; when such a combination occurs, then **P** (as a determined feature) is added during the latter part of the long bundle. An immediate change from /p t tᵛ k/ to a consonantal bundle involving a different point of articulation does not occur: a phase of **H** (plus **O**), or /ə/, intervenes, and **P** then occurs (as a predictable feature) simultaneously with the next bundle.

In either case, the bundles /ˈ ə/ turn out to be predictable wherever they occur.

There is one more bundle which can perhaps be regarded as predictable, and certainly does not need to be written linearly, in certain positions: /ʔ/. /ʔ/ occurs simultaneously with **P**, but only at the beginning of an utterance or after a syllable ending in a vowel (or /ˑ/); and after vowels, in which position it in a sense parallels **l**. In the latter position it contrasts with **l** and with the absence of either; in the former position it does not contrast, at least, with its absence (smooth vowel opening); one could simply say that where in syllable-initial no consonantal bundle involving **H** or **S** occurs, **G** does occur, and then write, linearly, /ˈidoŋ/ *who knows* instead of /ˈʔidoŋ/, and /ikˈkaaba/ *he kills him* instead of /ʔikˈkaʔaba/. The difference of notation is of course a matter of convention and convenience; the phonemic facts are that every syllable-initial bundle lacks component **v**, and consists of **G** unless it contains **H** or **V**.

8. Grouping of bundles. The bundles /I E Ɪ A U O/ never contrast with each other (**4**); Elson groups them as a single phoneme, /h/. The bundles /M N Ñ Ɲ Y/ occur in syllable-initial only after, respectively, /m n ñ ŋ y/; these also Elson takes to be /h/. Final postvocalic (but not post-/ˑ/) /I E Ɪ A U O/ Elson interprets as /h/, but not final devoicing (**H**) otherwise. Syllable-final /M N Ñ (Ɲ)/ occur only in positions in which /p t tᵛ (k)/ do not occur; Elson interprets respectively as /p t tᵛ (k)/.

Usually this is taken to involve the problem of 'partial intersection,' on which there is disagreement. From the point of view of the present paper, no such problem arises. As a matter of convention for linear orthography, elimination of the symbols /M N

N *N*/ as Elson does is useful—particularly so if, as may well be the case, morphemes which elsewhere end in, say, /t/, end instead in /N/ when followed by an initial /n/. As a matter of reducing the total number of phonemes, we need not be concerned, since what we are after is the occurrent arrangements of features or components and the varying degrees of interdependence between them. Even if we were interested in some such simplicistic form of the criterion of economy as 'smallest possible number of elements,' elimination of the /M/ series would not help, for the components involved in the /M/ series all occur elsewhere and have to be recognized anyway.

If we expand /hi he hɪ ha hu ho/ first into /Ii Ee/ etc., then into

i -
O -
HV
v

etc., we see what statement has to be made in terms of 'contrapuntal' analysis: one of the occurrent arrangements at the beginning of a syllable is one with long **i**, **e**, **u**, or **a**, in the latter two cases with or without long **r**, plus long **O**, and a change, from the first part of the long bundle to the second, from **H** to **V** and from absence of **v** to its presence.

If we similarly expand /m.hV/ etc., first to /m.MV/, etc., then to

P -(V)
N - O
VH V
P
v

etc., we see again what has to be said: one occurrent arrangement, in which the first bundle contains an oral closure, **N**, and **V**, is: continuation of the oral closure and of **N** while **V** is replaced by **H** and **P** is added, followed by release of the oral closure, replacement of **N** by **O**, of **H** by **V**, and the addition of vowel components and of **v**. /y.YV/ is treated similarly.

Finally, in sequences like /V(·)t.n/, we expand first to /V(·)N.n/, and then to

(V) t -
O N -
V H V ,
P
v

we can say that in the frame

(V) t -
O x N
V HV
P
v

x, which would have to be either **O** or **N**, is always **N**: the transition from **O** of the preceding bundle to **N** of the following bundle takes place with the oral closure, not with the new chest pulse and new voicing.

9. The syllable-nucleus sonority feature. We know that between every two successive bundles occurs one **v**. It is also to be observed that bundles containing **e** or **a** (and **V**) always contain **v**, that bundles containing **u** but not **r**, and **V**, always contain **v**, and that bundles not containing **i e u** or **a** never contain **v**. That is, save for certain crucial cases, the presence or absence of **v** is predictable in terms of the other features involved. The crucial cases are in /i/ versus /y/, and in /u/ versus /w/; /i/ contains all the components of which /y/ is composed (**i O V**), plus **v**; /u/ contains all the components of which /w/ is composed (**u r O V**), plus **v**.

Here there are three alternatives.

(1) Our treatment of /i y/ and of /u w/ as differing only in the way indicated may be wrong. That is, /y/ may involve a different tongue motion than does /i/, say closer approximation to the palate, or even some spirantization, and /w/ may have a comparable difference from /u/; or /y w/ may have the same tongue positions and lip positions as /i u/ but contain the feature of arrangement **b** = extra-short. If this is so, then the occurrence of **v** is entirely pre-

dictable: where **i**, **e**, **u**, or **a** occur, without **b**, there occurs also **v**, and **v** is not a component.

Even if our earlier treatment is correct, there remain two possibilities:

(2) If /y/ and /i/ are in complementary distribution within the syllable, linearly, and if **P** is a component, then the same linear symbol can be used: one would have **v** in addition automatically in certain positions, and lack it automatically in others. In syllable-initial this is feasible: /i/ does not occur, and /y/ does; /u/ does not occur, and /w/ does. In syllable-final, it is possible with /i/ and /y/, since /y/ occurs after other vowels than /i/ but not after /i/. (If the combination /iy./ occurred, in contrast to /i·./, then with **v** eliminated there would be no way to distinguish, componentially, between the two.) In syllable-final it may be possible with /u/ and /w/, but this is not clear, since Elson does not tell us whether the sequence /u·w/ occurs or not. If it does not, then **v** can be eliminated. If it does, perhaps we can eliminate **v** anyway: there would be no /uẇ/, since /w/ occurs only after vowel plus /·/ in the same syllable; one could say that where the components involved in /u/ occurred with DOUBLE the ordinary length, **v** was present throughout (/u·/), whereas when the length was TRIPLE the normal, **v** was present for the first two-thirds, and then absent (/u·w/).

(3) All of the above is on the assumption that **P** is a component. If **P** is not, then **v** must be retained, for otherwise there is no way to distinguish between such a sequence as /at.yi/ and one such as /a.ti·/.

10. Summary. An utterance in S. P. can be regarded as a group of interwoven melodies in which the glottis plays a monotonous and continuous ground bass of three tones, **G**, **H**, and **V**, the chest divides the entirety into successive 'measures' with **P** as the 'bar line', and plays some measures louder than others (presence or absence of **S**), the velick plays one of two notes, **O** and **N**, or occasionally none at all, the dorsum, like a snare drum, plays its one note **k** or none at all, the lips play one of two notes, **p** or **r**, or none, and the tongue dances the most varied melody of all; from the whole emerges a pattern within each 'measure' of varying sonority, the most sonorous point (**v**) always involving vibration of the vocal cords, a tongue-contour for resonance, and sometimes lip-rounding for addition resonance. The various tones occur only in certain chords and only in certain chordal sequences; if a tone occurs in two successive chords, it is 'tied over'; there are cadence-like limitations at beginning and end.

The description of the notes involved and the arrangements in which they occur constitutes the statement of the phonological structure of the language. We have not made all the useful statements which could be made, but have attempted at least to show clearly the distinction between real problems of interpretation and problems which arise only in the effort to establish a convenient linear orthography.

BIBLIOGRAPHY OF BIBLIOGRAPHIES OF NORTH AMERICAN INDIAN LANGUAGES STILL SPOKEN

HANS WOLFF
INDIANA UNIVERSITY

1. Introduction
2. Abbreviations and procedure
3. Alphabetic list of languages and language families

1.1. This paper provides a list of bibliographical references rather than a bibliography of original papers. The reference works cited are those which will give complete and detailed information about publications and manuscripts available. Items listed include texts, word lists, and complete articles on the language; they do not include incidental references to a language.

1.2. This paper omits names of extinct languages and tribal designations which frequently enter in the historical sources and in the anthropological literature. Such items would include Ofo, Biloxi, and Tutelo under Siouan, for example; Erie under Iroquoian; and other items, such as Chumash and many other extinct languages on the coast of California south of San Francisco Bay, Karankawa and the host of other languages formerly spoken in Texas along the Gulf of Mexico, not to mention the numerous languages aboriginal to Florida. The deliberate omission of these names points to the need for a specialized bibliography devoted to extinct languages. What is needed here is a critical bibliography distinguishing between ethnological and linguistic information given by the sources.

1.3. An addition of all items cited in this paper under one heading will not yield the total amount of items available but always a larger amount. AY includes many P listings and many IJAL items. Furthermore, there is an overlapping of approximately 10% in AY listings of language families and languages of the same families. References to AY include material from AA.

1.4. Since most of our references cover certain periods in the history of American Indian linguistic scholarship, it is possible to observe shifts of emphasis. P represents the bulk of activity up to 1894, or, approximately, the turn of the century. B marks the period of intensive scholarship under Boas and Sapir up to 1939. AY gives an overall view of the period from P to volume 10 of IJAL. Volumes 11 and 12 of IJAL, Lg., and LSNA bring the list up to date.

1.5. From a rapid survey of our data, it appears that the Algonquian family of languages has had precedence over all other families which had been established in Pilling's time. To the present day, Algonquian seems to have maintained this hegemony of interest. No other family has been so thoroughly studied. Since Pilling, however, there have been shifts of emphasis. We observe increasing interest in the study of Wakashan, Athabascan, Eskimo-Aleut, Siouan, Muskogean, and several other families come under scrutiny, such as Uto-Aztecan, Caddoan, Tanoan, Yuman, and Salish. On the other hand, there has been a sharp decline in the study of Iroquoian. The study of languages for which no certain linguistic affiliation has been found also reached a new climax during the period marked by Boas' editorship of the Handbook of American Indian Languages. Since Boas we are able to observe a new shift of emphasis and an interesting development. In recent years there has been a great increase in the writing of descriptive grammars of

individual languages, accompanied by a corresponding decline in purely comparative studies.

2. Abbreviations and procedure

AY: A Bibliographical Check List of North and Middle American Indian Linguistics in the Edward E. Ayer Collection (Chicago, 1941).

B: C. F. Voegelin and Z. S. Harris, Index to the Franz Boas Collection of Materials for American Linguistics, Lg. Monograph 22 (1945).

IJAL: International Journal of American Linguistics [references cited for volumes 1 to 12 inclusive (1917-46)].

Lg.a: Morris Swadesh, Bibliography of American Indian Linguistics, 1936-1937, Lg. 14.318-23 (1938).
C. F. Voegelin, Bibliography of American Indian Linguistics, 1938-1941, Lg. 18.133-39 (1942).

Lg.b: Lg. [additional references cited for volumes 19 to 21 inclusive (1943-45)].

LSNA: H. Hoijer and Others, Linguistic Structures of Native America (New York, 1946).

P: J. C. Pilling, Bibliography of the Eskimo Language, BAE-B 1 (1887).
——, Bibliography of the Iroquoian Languages, BAE-B 6 (1888).
——, Bibliography of the Muskhogean Languages, BAE-B 9 (1889).
——, Bibliography of the Algonquian Languages, BAE-B 13 (1891).
——, Bibliography of the Athapascan Languages, BAE-B 14 (1892).
——, Bibliography of the Chinookan Languages, BAE-B 15 (1893).
——, Bibliography of the Salishan Languages, BAE-B 16 (1894).
——, Bibliography of the Wakashan Languages, BAE-B 19 (1894).
[references to P are given only under language family headings; they serve to identify the volume to which reference is made.]

Names of language families appear in large capitals. First elements in each heading represent languages; dialects are listed in the same heading and connected by hyphen (-). Where no data are available for a language, reference is made to the language family. All references are to number of items, except in the case of P, where references are to the number of printed pages.

3. Alphabetic list of languages and language families

Abnaki (see Penobscot)

Achumawi (see also Atsugewi): AY 8 publ., B 9 mss, IJAL 3 publ.

Akwa'ala (see Diegueño)

Alabama-Koasati: P see MUSKOGEAN, Lg.b 1 publ.

Alaskan (see Eskimo)

Aleut (see also Eskimo): AY 15 publ., B 2 mss, IJAL 1 publ.

ALGONQUIAN (see also Cree, Menomini, Shawnee, Fox, Potawatomi, Ojibwa, Delaware, Penobscot, Malecite, Micmac, Blackfoot, Cheyenne, Arapaho): P 614 pp., AY 20 publ., Lg.a 8 publ., IJAL 8 publ., Lg.b 2 publ., LSNA 1 publ.

Algonquin (see Ojibwa)

Alsea: AY 2 publ., B 1 ms, IJAL 1 publ.

Apache (Chiricahua, Mescalero, Jicarilla, Lipan, San Carlos, Kiowa Apache): P see ATHABASCAN, AY 13 publ., B 1 ms, Lg.a 3 publ., IJAL 4 publ., Lg.b 1 publ., LSNA 1 publ.

Arapaho-Atsina-Nawathinehena: P see ALGONQUIAN, AY 13 publ., B 1 ms, IJAL 2 publ.

Arikara (see Pawnee)

Assiniboine (see Dakota)

Atakapa: AY 4 publ., IJAL 2 publ.

ATHABASCAN (see also Dogrib, Chipewyan, Kutchin, Tanana-Ingalik, Sekani-Sarsi, Carrier, Tahltan, Hupa, Kato, Chasta Costa, Mattole, Tolowa, Navaho, Apache): P 125 pp., AY 13 publ., Lg.a 4 publ., IJAL 1 publ.

Atsina (see Arapaho)

Atsugewi (see also Achumawi): B 4 mss

Bannock (see Mono)
Bear Lake (see Dogrib)
Beaver (see Sekani)
Bella Bella: P see WAKASHAN, AY 4 publ., B 5 mss
Bella Coola: P see SALISH, AY 4 publ., B 4 mss
Blackfoot-Blood-Piegan: P see ALGONQUIAN, AY 26 publ., Lg.a 4 publ., IJAL 4 publ.
Blood (see Blackfoot)
Buena Vista (see Yokuts)

Caddo (see also CADDOAN): AY 6 publ.
CADDOAN (see Caddo, Witchita, Kitsai, Pawnee)
Cahuilla (see also UTO-AZTECAN): AY 3 publ.
Carrier-Chilcotin: P see ATHABASCAN, AY 11 publ., B 1 ms
Catawba: P see SIOUAN, AY 6 publ., B 1 ms, IJAL 3 publ.
Cayuga (see Seneca)
Chasta Costa: P see ATHABASCAN, AY 2 publ.
Chauchila (see Yauelmani)
Chehalis-Cowlitz-Quinault: P see SALISH, AY 6 publ., B 14 mss, IJAL 1 publ.
Chemehuevi (see Ute)
Cherokee: P see IROQUOIAN, AY 71 publ., B 2 mss, IJAL 3 publ.
Cheyenne: P see ALGONQUIAN, AY 20 publ.
Chickasaw (see Choctaw)
Chilcotin (see Carrier)
Chinook: P 81 pp., AY 6 publ., 1 ms, B 8 mss, Lg.a 1 publ., IJAL 3 publ.
Chipewyan-Yellowknife-Slave: P see ATHABASCAN, AY 14 publ., IJAL 1 publ., LSNA 1 publ.
Chiricahua-Mescalero (see Apache)
Chitimacha: AY 2 publ., Lg.a 1 publ., IJAL 1 publ., LSNA 1 publ.
Choctaw-Chickasaw: P see MUSKOGEAN, AY 60 publ., Lg.a 1 publ.
Clallam (see Lummi)
Clear Lake (see Pomo)
Cocopa (see Kohuana)
Coeur d'Alène: P see SALISH, AY 2 publ., B 2 mss, Lg.a 1 publ., IJAL 2 publ.
Columbia-Wenatchi: P see SALISH
Colville Lake (see Okanagon)
Comanche (see Shoshoni)
Comox-Sishiatl: P see SALISH, B 2 mss
Coos: AY 2 publ., Lg.a 1 publ.
Cowlitz (see Chehalis)
Cree-Montagnais-Naskapi: P see ALGONQUIAN, AY 139 publ., 2 mss, B 1 ms, Lg.a 2 publ., IJAL 1 publ.
Creek-Seminole: P see MUSKOGEAN, AY 123 publ., Lg.a 5 publ., IJAL 1 publ.
Crow: P see SIOUAN, AY 4 publ., B 1 ms, Lg.a 2 publ., Lg.b 1 publ.
Cupeño (see UTO-AZTECAN)

Dakota-Assiniboine: P see SIOUAN, AY 173 publ., B 29 mss, Lg.a 3 publ., IJAL 1 publ., Lg.b 1 publ.
Delaware: P see ALGONQUIAN, AY 35 publ., Lg.a 1 publ., IJAL 1 publ., LSNA 1 publ.
Diegueño-Kamia-Akwa?ala (see also YUMAN): AY 4 publ.
Dogrib-Hare-Bear Lake: P see ATHABASCAN, AY 1 publ.
Duwamish (see Squamish)

Eskimo (Greenlandic, Alaskan): P 116 pp., AY 150 publ., B 5 mss, Lg.a 2 publ., IJAL 3 publ., LSNA 1 publ.
Eyak: AY 1 publ.

Flathead-Pend d'Oreille-Kalispel-Spokane: P see SALISH, AY 16 publ., B 4 mss, Lg.a 1 publ.
Fox-Sauk-Kickapoo: P see ALGONQUIAN, AY 12 publ., 1 ms, Lg.a 1 publ., IJAL 5 publ.
Fraser River (see Nanaimo)

Gosiute (see Shoshoni)
Greenlandic (see Eskimo)
Gros Ventre (see Arapaho)

Haida: AY 18 publ., B 7 mss, IJAL 2 publ.
Halchidhoma (see Yuma)

Halyukwamai (see Kohuana)
Han (see Tanana)
Hare (see Dogrib)
Havasupai-Walapai-Yavapai (see also YUMAN): AY 1 publ., IJAL 1 publ.
Hidatsa: P see SIOUAN, AY 4 publ., Lg.a 2 publ., IJAL 1 publ.
Hitchiti (see Mikasuki)
Hopi (see also UTO-AZTECAN): AY 11 publ., B 3 mss, Lg.a 3 publ., IJAL 1 publ., LSNA 1 publ.
Hupa: P see ATHABASCAN, AY 5 publ.
Huron (see Wyandot)

Ingalik (see Tanana)
Iowa-Oto: P see SIOUAN, AY 9 publ., B 1 ms
IROQUOIAN (see also Seneca, Mohawk, Oneida, Wyandot, Tuscarora, Cherokee): P 208 pp., AY 5 publ., IJAL 1 publ.
Isleta-Sandia (see Tiwa)

Jicarilla (see Apache)

Kalapuya: AY 1 publ., B 9 mss, IJAL 1 publ.
Kalispel (see Flathead)
Kamia (see Diegueño)
Karok: AY 6 publ., B 1 ms, IJAL 2 publ.
Kaska (see Tahltan)
Kathlamet (see Chinook)
Kato-Wailaki: P see ATHABASCAN, AY 3 publ., IJAL 1 publ.
Kaveltchadom (see Yuma)
Kawaiisu (see Ute)
Keresan: AY 6 publ., B 1 ms, IJAL 2 publ.
Kickapoo (see Fox)
Kiowa: AY 8 publ., B 1 ms, IJAL 1 publ.
Kiowa Apache (see Apache)
Kitamat: P see WAKASHAN
Kitsai (see CADDOAN)
Klamath-Modoc: AY 5 publ., IJAL 1 publ.
Koasati (see Alabama)
Kohuana - Halyukwamai - Cocopa (see YUMAN)
Koskimo (see Kwakiutl)
Koso (see Panamint)
Koyukon (see Tanana)
Kutchin: P see ATHABASCAN, AY 1 publ.
Kutenai: AY 21 publ., B 11 mss, IJAL 2 publ.
Kwakiutl: P see WAKASHAN, AY 28 publ., B 19 mss, Lg.a 3 publ., IJAL 3 publ.

Lillooet: P see SALISH
Lipan Apache (see Apache)
Luiseño (see also UTO-AZTECAN): AY 3 publ.
Lummi-Songish-Clallam: P see SALISH, AY 1 publ., B 1 ms
Lutuami (see Klamath-Modoc)

Maidu: AY 5 publ., B 2 mss
Makah: P see WAKASHAN, AY 1 publ.
Malecite-Passamaquoddy: P see ALGONQUIAN, AY 17 publ., IJAL 1 publ.
Mandan: P see SIOUAN, AY 10 publ., B 1 ms, Lg.a 1 publ., IJAL 1 publ.
Maricopa (see Yuma)
Mattole: P see ATHABASCAN
Menomini: P see ALGONQUIAN, AY 11 publ., Lg.a 1 publ.
Mescalero Apache (see Apache)
Micmac: P see ALGONQUIAN, AY 40 publ., 1 ms, Lg.a 1 publ.
Mikasuki-Hitchiti: P see MUSKOGEAN
Miwok: AY 2 publ.
Modoc (see Klamath-Modoc)
Mohave (see Yuma)
Mohawk: P see IRFQUOIAN, AY 73 publ., 2 mss
Molale (see Coos)
Mono - Bannock - Snake - Northern Paiute (Paviotso) (see also UTO-AZTECAN): AY 4 publ.
Montagnais (see Cree)
MUSKOGEAN (see also Choctaw, Alabama, Mikasuki, Creek): P 114 pp., AY 3 publ., Lg.a 3 publ.
Muskogee (see Creek)

Nanaimo-Lower Fraser River: P see SALISH, B 2 mss
Naskapi (see Cree)
Natchez: AY 4 publ., Lg.a 1 publ., IJAL 1 publ.

Navaho: P see ATHABASCAN, AY 27 publ., Lg.a 4 publ., IJAL 2 publ., Lg.b 1 publ.
Nawathinehena (see Arapaho)
Nespelim (see Okanagon)
Nez Percé (see also Sahaptin): AY 15 publ., 1 ms, B 2 mss
Nipissing (see Ojibwa)
Nitinat: P see WAKASHAN, IJAL 2 publ.
Nootka: P see WAKASHAN, AY 12 publ., B 9 mss, Lg.a 3 publ., IJAL 2 publ.

Ojibwa-Ottawa-Algonquin-Salteaux: P see ALGONQUIAN, AY 247 publ., 3 mss, Lg.a 2 publ.
Okanagon-Sanpoil(Nespelim)-Colville Lake: P see SALISH, AY 2 publ., B 1 ms
Omaha-Ponca-Osage-Kansa-Quapaw: P see SIOUAN, AY 20 publ., B 5 mss, IJAL 1 publ.
Oneida: P see IROQUOIAN, AY 5 publ.
Onondaga (see Seneca)
Oto (see Iowa)
Ottawa (see Ojibwa)

Paiute, Northern (see Mono)
Paiute, Southern (see Ute)
Panamint(Koso) (see Shoshoni)
Papago (see Pima)
Passamaquoddy (see Malecite)
Patwin (see also Wintu): B 8 mss
Paviotso (see Mono)
Pawnee-Arikara (see also CADDOAN): AY 14 publ., B 2 mss, Lg.a 2 publ., IJAL 1 publ.
Pend d'Oreille (see Flathead)
Penobscot-Abnaki: P see ALGONQUIAN, AY 29 publ., IJAL 2 publ.
Piegan (see Blackfoot)
Pima-Papago (see also UTO-AZTECAN): AY 12 publ., B 2 mss, Lg.a 2 publ.
Pomo: AY 6 publ., B 5 mss
Potawatomi: P see ALGONQUIAN, AY 6 publ., 1 ms, Lg.a 1 publ.

Quileute: AY 3 publ., B 3 mss, Lg.a 1 publ., IJAL 1 publ.
Quinault (see Chehalis)

Sahaptin (see also Nez Percé): AY 3 publ., B 1 ms
SALISH (see also Bella Coola, Coeur d'Alène, Columbia, Comox, Lummi, Nanaimo, Chehalis, Okanagon, Shuswap, Flathead, Squamish, Thompson, Tillamook, Twana, Lillooet): P 86 pp., AY 4 publ., IJAL 2 publ.
Salteaux (see Ojibwa)
San Carlos (see Apache)
Sanpoil (see Okanagon)
Sarsi (see Sekani)
Sauk (see Fox)
Sekani-Sarsi-Beaver-Stonies: P see ATHABASCAN, AY 17 publ., IJAL 1 publ.
Seminole (see Creek)
Seneca-Cayuga-Onondaga: P see IROQUOIAN, AY 47 publ.
Serrano (see UTO-AZTECAN)
Shasta (see also Achumawi): AY 3 publ., B 3 mss
Shawnee: P see ALGONQUIAN, AY 10 publ., 2 mss, Lg.a 3 publ.
Shoshoni-Comanche-Gosiute-Wind River-Panamint(Koso) (see also UTO-AZTECAN): AY 19 publ., Lg.a 3 publ.
Shuswap: P see SALISH, AY 6 publ.
SIOUAN (see also Catawba, Iowa-Oto, Winnebago, Omaha-Osage, Dakota, Mandan, Hidatsa, Crow): P 87 pp., Lg.a 2 publ., IJAL 1 publ.
Sishiatl (see Comox)
Slave (see Chipewyan)
Snake (see Mono)
Songish (see Lummi)
Spokane (see Flathead)
Squamish: P see SALISH, AY 1 publ., B 1 ms
Stonies (see Sekani)

Tahltan-Kaska: P see ATHABASCAN, AY 1 publ.
Takelma: AY 4 publ., IJAL 1 publ.
Tanana- Ingalik- Koyukon- Han- Tutchone: P see ATHABASCAN, AY 1 publ., Lg.a 1 publ.
TANOAN (see also Tewa, Tiwa, Towa): AY 2 publ.

Taos-Picurís (see Tiwa)
Tewa (see also TANOAN): AY 4 publ.
Thompson: P see SALISH, AY 1 publ., B 5 mss
Tillamook: P see SALISH, AY 2 publ., B 1 ms, Lg.a 1 publ., IJAL 2 publ.
Tiwa (see also TANOAN): AY 2 publ., B 3 mss, Lg.a 2 publ., IJAL 1 publ., LSNA 1 publ.
Tlingit: AY 14 publ., B 1 ms, Lg.a 1 publ., IJAL 4 publ.
Tolowa: P see ATHABASCAN, Lg.a 1 publ.
Tonkawa: AY 2 publ., Lg.a 1 publ., LSNA 1 publ.
Towa (see TANOAN)
Tsimshian: AY 25 publ., B 10 mss
Ts?ets?aut (see Tahltan)
Tübatulabal (see also UTO-AZTECAN): AY 3 publ., B 1 ms, Lg.a 2 publ.
Tunica (see also Chitimacha, Atakapa): AY 2 publ., Lg.a 1 publ., IJAL 1 publ., LSNA 1 publ.
Tuscarora: P see IROQUOIAN, AY 6 publ.
Tutchone (see Tanana)
Twana: P see SALISH, AY 1 publ.

Umpqua-Siuslaw: AY 2 publ.
Ute-Southern Paiute-Chemehuevi-Kawaiisu (see also UTO-AZTECAN): AY 9 publ.
UTO-AZTECAN (see also Luiseño, Cahuilla, Serrano, Cupeño, Tübatulabal, Pima-Papago, Hopi, Ute-Southern Paiute, Shoshoni-Comanche, Mono-Bannock): AY 4 publ., Lg.a 4 publ., LSNA 1 publ.

Wailaki (see Kato)
WAKASHAN (see also Nootka, Nitinat, Makah, Kwakiutl, Bella Bella, Kitamat): P 70 pp., AY 1 publ.
Walapai (see Havasupai)
Wappo (see also Yuki): AY 3 publ.
Washo: AY 4 publ., IJAL 1 publ.
Wenatchi (see Columbia)
Wind River (see Shoshoni)
Winnebago: P see SIOUAN, AY 10 publ., B 3 mss, Lg.a 1 publ.
Wintu (see also Patwin): AY 3 publ., Lg.a 1 publ., IJAL 2 publ.
Wishram (see also Chinook): AY 3 publ., B 1 ms
Witchita (see CADDOAN)
Wiyot: AY 2 publ.
Wyandot (Huron): P see IROQUOIAN, AY 14 publ.

Yakonan (see Alsea)
Yawelmani-Chauchila (see also Yokuts): LSNA 1 publ.
Yavapai (see Havasupai)
Yellowknife (see Chipewyan)
Yokuts: AY 4 publ., IJAL 2 publ., LSNA 1 publ.
Yuchi: AY 3 publ., B 1 ms
Yuki (see also Wappo): AY 2 publ., B 1 ms
Yuma- Mohave- Maricopa- Kaveltchadom-Halchidhoma (see also YUMAN): AY 18 publ., IJAL 3 publ., LSNA 1 publ.
YUMAN (see also Havasupai, Yuma, Kohuana, Diegueño): AY 6 publ.
Yurok: AY 7 publ., B 1 ms

Zuñi: AY 16 publ., 1 ms, B 2 mss, Lg.a 2 publ.

REVIEWS

J. Philipson. O parentesco tupi-guarani. São Paulo, Brazil, 1946. (Universidade de São Paulo, Faculdade de Filosofia, Ciências e Letras, Boletim LXIII, Etnografia e Língua Tupi-guarani, No. 11.) 19 p.

The first five Bulletins in this series were reviewed by Paul L. Garvin in IJAL 12.45–8 (1946). The introductory criticism made of them by Garvin seems applicable to the present work also: interest is apparently centered on history and the old documents rather than on the recording and analysis of the languages still spoken. (Incidentally, in the work under review the name of the language family is consistently spelled without accent marks, as shown above.)

Philipson's very short article (p. 7–17; p. 1 is the series title, 3 the separate title, 5 contains a prefatory note by Plínio Ayrosa, and 19 has a very brief English summary) is a kind of review of another article with the same title (Tupi-Guarani kinship) by Charles Wagley and Eduardo Galvão (Boletim do Museu Nacional, nova serie, Antropologia no. 6, Rio de Janeiro, 1946); it is essentially a restatement of Philipson's previous article, Nota sôbre a interpretação sociológica de alguns designativos de parentesco do Tupi-guarani (Boletim LVI, no. 9, of the same series as the work under review).

Both as ethnology and as linguistics such an article is difficult to evaluate. The actual terms themselves are few in number, six all told. They are discussed as isolated bits of lore, with no analysis as parts of either a linguistic system (apparently they are possessed nouns) or a social structure. The terms are, it would seem, from Tapirapé, but other languages are brought in rather at random. Wagley and Galvão seem to set up a single Tupi-Guarani kinship system, but Philipson contends that the several languages of the family have different systems; he is probably right.

For the six terms given by Wagley, Philipson has six other terms (secured not by himself but by Herbert Baldus in 1935 and used by him from manuscript). The only coincidence is in the 1st sg. pronominal possessive prefix, še- (spelled che-), and in some of the constituent elements of the longer terms (che-ropý vs. cherovuýrangi, where -ropý and -rovuý- seem connected). Philipson's explanations of what the forms mean and of their elements are quite different from those of Wagley and Galvão. Judgment must be suspended until we have lists of Tapirapé (and other Tupi-Guarani) kinship terms recorded in correct linguistic form, with full morphological analysis, and accompanied by fool-proof ethnological statements. It cannot be over-emphasized that without such full data the ethnologist (and also the linguist) can make all kinds of errors in his conclusions; for some instances, see my Kinship and status terms of the Tiwa languages, AA 45.557–71 (1943).

George L. Trager
University of Oklahoma

Salishan Studies. Comparative Notes On Kalispel, Spokan, Colville, And Coeur D'Alene. By Hans Vogt. Skrifter Utgitt av Det Norske Videnskaps- Akademie I Oslo II. Hist.-Filos. Klasse. 1940. No. 2, Oslo, 1 Kommisjon Hos Jacob Dybwad, 1940, 19 p.

Salishan Studies is a report of a comparative study of the phonetics and phonemics of four Salish languages. The main body of the material consists of two hundred words in Kalispel, Spokan, and Colville. The results of the work on these three languages are then compared with the published grammar of Coeur D'Alene by Gladys Reichard. Field work was done during the summer of 1937 and was concentrated on Kalispel.

The two hundred words are grouped under

the following categories: human society, human body, man-made things, nature, animals, plants, food, attributes, and activities.

In the examination and comparison of the lists, Vogt found that there were more frequent identities or correspondences between Kalispel and Spokan than there were between Colville and either of the other two. In the section on Phonetic Remarks (p. 10) and Phonemic Remarks (pp. 11 and 12), the author indicates the main points of agreement and difference among the languages. On page 19 in the conclusion the position of Coeur D'Alene in relation to the other three languages is indicated. This in brief is a summary of the paper. There are no definite conclusions pertaining to diffusion or the integration of the phonemic structure. As his conclusion the author states, p. 19, "The four languages which have been studied here form three distinct groups."

There is much in the presentation which can be of value to students of the Salish languages. However, it is hoped that Vogt will continue with his work and include a treatment of morphology and semantics. The reviewer would have liked the kind of treatment of phonetics and phonemics stressed by Boas and Sapir where morphology and semantics are considered in relation to phonetics and phonemics.

In even a cursory reading of the lists I was able, on the basis of my own work with Puyallup, Twana and Chehalis, to recognize certain affixes in the Kalispel, Spokan and Colville words, which would have to be understood morphologically before they could be interpreted phonemically. The importance of this integration is implicit in Vogt's paper, although it is not stressed.

There is no explanation as to why the particular two hundred words were selected except that Vogt had very little time in the field. Thus there may be a question in the mind of the reader as to how representative the particular words are as a sampling of the entire vocabularies.

The reviewer was particularly intrigued with the headings under which the words were grouped. One would expect words which would be included in these categories to be present in every culture in the world. Some work has been done along these lines and it has been found that there is a large number of universal categories. In other words, there is a large number of universals which are reflected in every language in the world. It is possible that if we reexamine the work in linguistics we may be able to apply the work of Vogt and many others in the formulation of a universal language based upon universals. From this standpoint Vogt's paper falls into another plane. Herein lies the stimulus incorporated in the paper in a field which has hardly been touched as yet when considered in the total field.

ETHEL G. AGINSKY
HUNTER COLLEGE

THE FOLKTALE. By Stith Thompson. The Dryden Press, New York, 1946. 510 pp. $6.00.

Stith Thompson's comprehensive treatment of the folktale is the first work of its kind to appear in English. For linguists who have made text collections, but lack a background of systematic folklore study, this work will probably be especially useful. A goodly portion of it is devoted to terse content resumes and discussion of both Old and New World tale plots and cycles (Parts II and III), and it also carries two bibliographies, one of important books on the folktale (Appendix A), the other, an areally classified bibliography of the larger folktale collections (Appendix B).

Especially relevant for Americanists is Part III, which deals with the folklore of the North American Indians. The seven chapters in this section include a short introduction (pp. 297–302) followed by material on creation myths (pp. 303–18), the trickster cycle (pp. 319–28), test and hero tales (pp. 329–44), journeys to the other

world (pp. 345–52), animal wives and husbands (pp. 353–58), and miscellaneous tales (pp. 359–63). None of the North American Indian material presented is new, nor are there any new interpretations offered, but the section as a whole provides a useful summary introduction to an important field of study. The specialist may find the summary dulled by over-simplification of statement (the Zuni creation material, for example, is the only creation material discussed for the whole of the Southwest); by too great a reliance on material published prior to 1930 (points raised by Morris Opler in his several excellent publications on Apache folklore, 1935–45, by Gayton and Newman, Edel, and others are not mentioned, for instance); by the lack of references to stylistic features of tale texts: but since the entire book is apparently intended as an introductory survey of the field, these are minor points.

ERMINIE W. VOEGELIN
INDIANA UNIVERSITY

THE RELATION OF AMERICAN INDIAN LINGUISTICS TO GENERAL LINGUISTICS. By Edward Sapir. Southwestern Journal of Anthropology 3.1–4 (1947).

AMERICAN INDIAN GRAMMATICAL CATEGORIES. By E. Sapir and M. Swadesh. Word 2.103–12 (1946).

THE LINGUISTIC MAP OF ARIZONA. By William Kurath. The Kiva 12.10–2 (1946).

TLALOCAN. A Journal of Source Materials on the Native Cultures of Mexico 2.97–192 (1946).

LOAN-WORDS IN ANCIENT MEXICO. By Benjamin Lee Whorf. Middle American Research Institute, Tulane University of Louisiana. Philological and Documentary Studies, vol. 1, no. 1. Publication No. 11, pp. 1–12 (1943).

PITFALLS AND STIMULI IN THE INTERPRETATION OF HISTORY THROUGH LOAN WORDS. By J. Eric S. Thompson. Ibid., vol. 1, no. 2. Publication No. 11, pp. 17–28 (1943).

THE SPANISH WORD JÍCARA. A Word History. By Lawrence B. Kiddle. Ibid., vol. 1, no. 4. Publication No. 11, pp. 115–54 (1944).

TEXTOS EN IDIOMA CORA. By Raymundo Diaz Flores. Escuela Nacional de Anthropología. Publicación No. 3, Mexico, 1945. 24 pp.

Sapir, in a posthumous paper, points to the value of American Indian linguistics for students planning to occupy themselves with other branches of general linguistics. He stresses these points: (1) The geographic distribution of "phonetic" (=phonemic) elements often surpasses genetic boundaries; this constitutes an object lesson for historical work. (2) These remarks apply to morphological features too. (3) Among these languages, in a relatively uniform culture area, great structural variety may prevail: "the content of language reflects culture with painstaking accuracy but its morphological outlines seem to be essentially independent of such cultural influence." (4) Knowledge of American Indian languages helps avoid the risk of universalizing formal features, or minimizing apparent peculiarities, when making general statements. (5) Inductive type of training may be gotten by field work: direct contact with speech is pedagogically desirable instead of access to conventional records.

In another posthumous paper, Sapir again underlines the existence of the "most bewildering diversities of form" among American Indian languages. To demonstrate the diversity of grammatical categories, he translates the sentence *he will give it to you* into six languages, Wishram, Takelma Southern Paiute, Yana, Nootka, and Navaho. The resulting structural transformations are then analyzed by Swadesh, who stresses differences but hopes for future statistical generalizations. Selected bibliography and "Sapir's Notes" follow the discussion.

Kurath's survey of the linguistic situa-

tion in Arizona is not, as the title leads one to expect, graphic, but verbal. Among Indian languages, the following are mentioned, with comments (mostly on location): Athabascan—Navaho and various kinds of Apache; Yuman—Havasupai-Walapai-Yavapai, Mohave-Yuma-Maricopa, Cocopa, Diegueño; Uto-Aztecan—Pima-Papago, Tepecano, Yaqui, Hopi, Shoshonean, Paiute; Zuñi; Tewa; and Seri.

The purpose of Tlalocan appears from its subtitle. The present issue, among the documents, includes a collection of Zoque texts, by William L. Wonderly (97–105); an article entitled "The Flea. Melody Types and Perturbations in a Mixtec Song," by Kenneth L. Pike (128–33); two Chontal texts, "Masculine Crab & Mosquitoes", by Kathryn Keller and Margaret Harris (138–40); a Yaqui story recorded by John M. Dedrick, on "How Jobe?eso Ro?i Got His Name" (163–6). Among the notes and queries there is a list of Mixe toponymic terms by Miller (185–7) and a discussion of Totonac categories of smell by Aschmann (187–9). The journal is attractive in appearance. Its editors are R. H. Barlow and George T. Smisor, at La Casa de Tlaloc, Santander 27, Azcapotzalco, D. F., Mexico.

As a paper of methodological interest, Whorf's posthumous paper is of great value; as a precise reconstruction, it remains quite tentative. His first step is to eliminate post-Conquest loans. Words borrowed directly from Aztec are then examined. Whorf demonstrates that the direction of the borrowing must have been from the Aztec to the Maya, not in reverse. The term Macro-Penutian is here introduced in a quasi Sapirian sense to cover "the possible and even probable common origin of the Uto-Aztecan, Maya, and Penutian stocks." (See this issue of IJAL, above, for a reconstruction of Penutian!) The Aztec vocabulary in Maya and Quiché is much larger than in other Uto-Aztecan, and structurally similar, Cora, Heve, or Tepecano; the latter, in spite of presumably heightened receptivity, have borrowed less because of the shorter period of culture contacts with Aztec. Linguistic data suggest that Maya and the Cora-Huichol, widely separated now, may have been in contact. The possibilities of historical inference are finally sketched.

Thompson points out the weaknesses of Whorf's conclusions, and even of some of his data, from the point of view of an archeologist and historian. His reply supplements Whorf's methodological hints and improves on his data. He suggests that linguistics and archeology are "sufficiently related to make specialization in both the aim of some of our students.

Kiddle's careful study traces Spanish jícara to Nahuatl or Aztec xicalli, a term applied by the latter to a vessel made from the dried shell of the fruit of the calabash tree. The form higüero is the hispanized version of an Arawak word. The importance and long history of this word in Spanish is due to the connection with chocolate, which was prepared and served in the vessel by that name.

Flores's Cora texts is preceded by a brief sketch of the history of the Cora, by R. H. Barlow, with bibliography. The texts themselves include the story of Jesus Maria, two fiestas, and two autobiographies.

THOMAS A. SEBEOK
INDIANA UNIVERSITY

LANGUAGE INDEX FOR VOLUME 13[1]

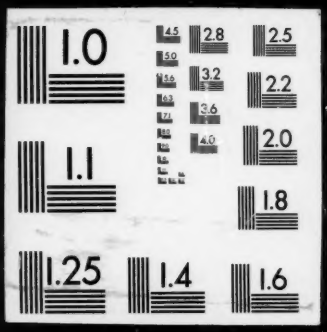
Abnaki 269.
Achumawi 269.
Akwa?ala 269.
Alabama 135f., 269.
Aleut 66, 127, 171f., 196f., 269f.
Algonquian 8, 60, 127, 183, 202, 269f.
Algonquian, Proto- 60.
Alsea 117f., 269.
Amuzgo 123f.
Apache 59, 60, 269, 276, 277.
Arapaho 269.
Arikara 269.
Assiniboine 269f.
Atakapa 120f., 269.
Athabascan 117, 202, 269f., 277.
Atsina 269.
Atsugewi 269.
Aztec 63, 66, 251, 277f.
Bannock 270.
Bear Lake 270.
Beaver 270.
Bella Bella 270.
Bella Coola 129, 270.
Beothuk 203.
Biloxi 1f., 268.
Blackfoot 8, 270.
Blood 270.
Boruca 249f.
Buena Vista 270.
Caddoan 270f.
Cahita (= Yaqui) 123.
Cahita (= Mayo) 123.
Cahuilla 117, 208, 270.
Cakchiquel 108, 123.
Carrier 269.
Catawba 1, 270.
Cayuga 270.
Chasta Costa 269f.
Chatino 123f., 220f.
Chauchila 270.
Chehalis 270f., 275.
Chemehuevi 270.
Cherokee 127, 270f.
Cheyenne 269f.
Chiapanec 4.
Chibchan 9.
Chichimeca 123f.
Chickasaw 135f., 270.
Chilcotin 270f.
Chinantec 123f.
Chinook 206, 270f.
Chinook Jargon 126f.
Chipewyan 63, 141, 269f.
Chitimacha 62, 117, 120f., 270.
Chocho 123f.
Choctaw 117, 135f., 202, 270f.
Chol 123f.
Chontal 123f., 277.
Chumash 205, 268.
Čibča 203.
Clallam 270.
Clear Lake 270.
Cocopa 270, 277.
Coeur d'Alene 132, 270, 274.
Columbia 270.
Colville Lake 270, 274.
Comanche 144f., 270.
Comox 270.
Coos 206, 270.
Cora 123f., 208, 277f.
Costanoan 205f.
Cowlitz 270f.
Cree 60, 127, 269f.
Creek (= Muskogee) 135f., 202, 270.
Crow 270.
Cucapá 123f.
Cuicatec 123f.
Cuixtla 220f.
Cuna (San Blas) 9f.
Cupeño 270.
Dakota 1f., 117, 269f.
Delaware 60, 66f., 175f., 269f.
Diegueño 269f., 270.

[1] This index lists only American Indian languages; the numbers refer to pages in Volume 13 of IJAL. Numbers followed by f. indicate that the language is mentioned not only on the page given, but also in the following pages of the same article or review; so also, if the language forms the main topic of the article or review, it is indexed by title page reference, with f.

Dhegiha 1f.
Dogrib 269f.
Duwamish 270.
Erie 268.
Eskimo 47f., 59, 66, 126f., 141, 178, 188, 203, 269f.
Eyak 270.
Flathead 270f.
Fox 60, 269f.
Fraser River 270.
Gosiute 270.
Gros Ventre 270.
Guaraní 67, 200f., 202f., 204, 274.
Haida 270.
Halchidhoma 270.
Halyukwamai 271.
Han 271.
Hare 270.
Havasupai 187f., 271, 277.
Heve 277.
Hidatsa 1f., 271.
Hitchiti 117, 135f., 202, 271.
Hokan 123.
Hopi 61, 117, 208, 271, 277.
Huasteco 123f.
Huave 123f., 206.
Huchnom 117.
Huichol 123f., 208, 277.
Hupa 269f.
Huron 271.
Ingalik 269f.
Ioway 233f., 271.
Iroquoian 127, 202, 270f.
Isleta 271.
Ixtlan 220f.
Jicarilla 269f.
Jîwele 233f.
Kalapuya 206, 271.
Kalispel 270f., 274.
Kamia 270f.
Kanza (= Kansa) 7, 272.
Karankawa 117f., 268.
Karok 271.
Kaska 271.
Kathlamet 271.
Kato 269.
Kaveltchadom 271.
Kawaiisu 271.
Keresan 271.
Kickapoo 123f., 270f.
Kiowa 117, 141, 269.
Kitamat 271.
Kitsai 270.
Klamath 271.
Koasati 135f., 202, 269f.
Kohuana 270f.
Koskimo 271.
Koso 271.
Koyukon 271.
Kutchin 269.
Kutenai 69f., 117.
Kwakiutl 271.
Lillooet 271.
Luiseño 271.
Lummi 270.
Lutuami 271.
Macro-Penutian 124.
Maidu 205f., 271.
Makah 271.
Malecite 269.
Mam 123f.
Mandan 1f., 271.
Maricopa 187f., 271, 277.
Mashko 203.
Matlatzinca 123f.
Mattole 269.
Mayan 108, 123f., 138, 204, 206.
Mayo 123f.
Mazahua 123f.
Mazateco 78f., 123f.
Menomini 60, 269.
Micmac 269.
Mikasuki 135f., 271.
Missouri 233f.
Miwok 31f., 117, 205f., 271.
Mixe 123f., 206, 277.
Mixteco 66, 82, 88, 123f., 204, 221f., 251
Modoc 271.
Mohave 187, 271, 277.
Mohawk 271.
Molale 271.
Mono 117, 208, 270.
Montagnais 270.
Muskogean 269.
Muskogean, Proto- 135f., 202f.
Muskogee (= Creek) 117

Nahuatl 119, 123f., 126, 203, 208, 277.
Nanaimo 270.
Naskapi 270.
Natchez 120, 136, 271.
Navaho 193f., 269, 276f.
Nawathinehena 269.
Nespelim 272.
Nez Percé 272.
Nipissing 272.
Nitinat 272.
Nootka 272, 276.
Ofo 1f., 268.
Ojibwa 60, 269.
Okanagon 270.
Omaha 272.
Oneida 127, 271.
Onandaga 272.
Osage 2f., 117f., 272.
Oto 233f., 271.
Otomí 123f.
Ottawa 272.
Paiute (Northern) 271.
Paiute (Southern) 117f., 272, 273, 276.
Pame 123f.
Panamint 271.
Papago 117, 119, 123f., 208, 272, 277.
Passamaquoddy 272.
Patwin 117, 209, 272.
Paviotso 272.
Pawnee 269.
Pend d'Oreille 270.
Penobscot 269f.
Penutian 124, 205f., 277.
Picurís 273.
Piegan 270.
Pima 117, 208, 272, 277.
Pomo 31, 117, 202, 272.
Ponca 1f., 272.
Popoloca (Puebla) 123f.
Popoluca (Sierra) 13f., 66, 123f.
Potawatomi 269.
Puyallup 275.
Quapaw 272.
Quechua (= Quiché) 66f., 123f., 127, 204 277.
Quileute 272.
Quinault 270.
Sahaptin 206, 272.
Salinan 127.
Salish 202, 270, 274f.
Salteaux 272.
San Carlo 269.
Sandia 271.
Sanpoil 272.
Santee 3.
Sarsi 269.
Sauk 270.
Sekani 269.
Seminole 135f., 270f.
Seneca 62.
Seri 123f., 277.
Serrano 272.
Shasta 272.
Shawnee 269.
Shoshoni 270, 277.
Shuswap 272.
Sishiatl 270.
Siouan 1f., 127, 202, 234, 270f.
Siuslaw 273.
Slave 270.
Snake 271.
Songish 271.
Spokane 270, 274.
Squamish 270f.
Stonies 272.
Subtiaba 123.
Suisun 127.
Tahltan 269f.
Takelma 206, 276.
Tanana 269.
Tanoan 272.
Taos 61, 117f., 273.
Tapirapé 274.
Tarahumara 117f., 123f., 141, 208.
Tarascan 66, 123f.
Tehuantepec 220f.
Tepecano 208, 277f.
Tepehuan 123f.
Teton 2f.
Tewa 112f., 272, 277.
Thompson 272.
Tillamook 132, 272.
Tiwa 271, 274.
Tlapanec 123f.
Tlingit 273.
Tojolabal 123f.

Tolowa 269.
Tonkawa 62, 117, 273.
Totonaco 66, 91, 123f., 204, 206.
Towa 272.
Trique 123f.
Tsimshian 206, 273.
Tsotsil (= Tzotzil) 108f., 123f.
Ts'eta'aut 273.
Tunebo 202f.
Tunica 62, 117, 273.
Tupi 202f., 274.
Tuscarora 271.
Tutchone 272.
Tutelo 1f., 268.
Tübatulabal 208, 273.
Twana 272, 275.
Tzeltal 123f.
Umpqua 273.
Ute 208, 270.
Uto-Aztecan 123f., 208, 270, 277.
Wailaki 271.
Wakashan 270f.
Walapai 187, 271, 277.
Wappo 117, 273.
Washo 273.
Wenatchi 270.
Wind River 272.
Winnebago 167f., 272.
Wintun 31, 117, 205f., 272.
Wishram 273, 276.
Witchita 270.
Wyandot 271.
Wyot 273.
Yakonan 273.
Yana 276.
Yaqui 124, 277f.
Yatzachi el Bajo 220f.
Yavapai 187, 271, 277.
Yawelmani 55f., 61, 211f., 273.
Yellowknife 270.
Yokuts 55, 61, 117, 205f., 270.
Yuchi 273.
Yuki 117, 273.
Yuma 18f., 61, 62, 92f., 147f., 187f., 270f., 277f.
Zapotec 123f., 204, 220f., 231f.
Zoque 14, 71, 123f., 204, 206, 277.
Zuñi 273, 276, 277.


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1
8.0
9.0
10.0